Managing Fall Protection Hazards Handbook

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Competent Person Requirements

Key issues to be discussed in this section include:

1. Competent person definition.

2. Competent person responsibilities.

Competent Person Definition

Competent person means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and who has the **authorization** to take prompt corrective measures to eliminate them.

Employers Responsibility

The employer shall assure that each employee has been trained, as necessary, by a competent person who is qualified in the areas of fall protection being used on the job.

Competent Person Responsibilities

1. The competent person shall train each employee who might be exposed to a fall hazard, and teach that employee to recognize the hazards of falling and the procedures to be followed to eliminate or guard against falls.

2. The competent person must take prompt corrective measures to eliminate, guard against or manage the fall hazards as they are recognized. If the employer does not give this individual this authority to take immediate corrective action, then OSHA will not view this individual as a competent person.

3. The competent person must also have the required knowledge/experience base with the fall protection measures in place on the job. In other words, if no safety nets are or will be used on the site, then there is no requirement that the competent person train employees on the installation/inspection of safety nets, or that the competent person be qualified in the area of safety nets.

Knowledge/Experience Base

As referenced by 1926.503 (a), the competent person must train all exposed employees on the job and be qualified in some very specific areas. Remember, the competent person is not required to be qualified in areas where no such systems will be implemented on the site. In other words, if no horizontal life lines will be used then they are not required to be qualified in this area of fall protection. As referenced by 1926.503 (a) (2), the competent person must be qualified in the following areas:

1. The nature of fall hazards in the work area.

2. The correct procedures for erecting, maintaining, disassembling and inspecting the fall protection systems being used.

3. The use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, controlled access zones and other protection to be used.

4. The role of each employee in the safety monitoring system when this system is used.

5. The limitations on the use of mechanical equipment during the performance of roofing work on low sloped roofs.

6. The correct procedures for handling and storage of equipment and materials and the erection of overhead protection (such as installing toe- boards on guardrails).

7. The role of all employees in fall protection plans.

8. The standards contained in 1926 Subpart M.

Pre-planning for Fall Prevention

Key concepts to be discussed within this section include:

1. Pre-planning from the design stage.
2. Engineer out the fall hazards.
3. Contractor selection.
4. Pre-bid job meetings.

Pre-Planning from the Design Stage

Providing for fall protection from the design phase is by far one of the most effective means of eliminating or controlling these exposures. If possible, all owners and contractors should spend adequate time with designers and architects to provide fall protection. The following approaches should assist in this area:

1. Have the architect/designer specify the assembly of systems on the ground and lifted into place.

2. Ensure all stairways and open sided floors are delivered to the site with guardrails already installed or ready to be installed.

3. Specify in the work procedures that openings for ductwork, plumbing, stairs and other systems are not to be created until the need for the opening is required.

4. In areas where fall prevention methods cannot be adequately addressed, specify the most appropriate protective measure as follows:

    a) Appropriate, pre-installed anchor points for personal fall arrest.
    b) Horizontal/vertical lifeline installation before exposure.
    c) Fall restraint options.

5. Have the architect design all parapet walls to be at least 39 inches high; this negates the need for additional fall protection in roofing operations.

6. Follow the procedures in the *Analyzing the Work Area* section, and review the checklists in the *Identifying Common Fall Hazards* section, to assist the designers and architects in providing fall protection from the design stage.

Engineer Out the Fall Hazards

If the design phase has already taken place, and there are still fall hazards that have not been addressed, it is still possible to engineer out the hazards. These options or methods can be rather simple and some may require the assistance from a qualified person or engineer.
The following options and explanations should assist contractors.

1. If components have been delivered/ordered without fall protection systems, is it possible to do the following?

    a) Install the guardrails before an exposure exists.
    b) Design/purchase a lifeline system and install system before employees are on the surface.
    c) Install safety nets to assemblies on the ground and lift into place.
    d) Apply alternate work methods such as working from scissor lifts instead of walking the surface without protection.

2. Alter the work procedures/schedule to avoid additional hazards to workers.

    a) Cut floor/roof openings only when needed, avoiding the need for covers.
    b) Assemble the roof in sections, including the decking, to minimize the need for fall protection during decking operations.
    c) Complete as much work from scissor lifts as possible, minimizing the need for personal fall arrest systems.

3. Install permanent stair systems instead of using ladders for access to different levels.

4. If possible, implement scissor lifts instead of employing scaffold systems.

5. If elevations differ, design and install ramps with guardrails.

6. If work is required within the structure or trusses, build a temporary work platform with guardrails installed and provide a safe access to eliminate this hazard.

7. Review sections, *Identifying Common Fall Hazards* and *Analyzing the Work Area*, to assist in addressing the unique engineering options that may be available to eliminate additional exposures.

Contractor Selection

A method available to contractors to limit the possibility of fall injuries on their site is the proper selection of contractors. In regards to fall protection the following are some key issues to address when selecting contractors.

1. Does the contractor have a written safety program which addresses fall protection?

2. Has the contractor followed their safety program in the past?

3. Is the contractor's Experience Modification Rate (EMR) at or below 1.0?

4. Has the contractor had any serious falls in the past three years?

5. Does the contractor address the issue of fall protection seriously?

6. Is their system pro-active, or do they merely meet the OSHA standards?

7. Do they explain their methods of providing fall protection?

8. Is the contractor willing to comply with owners more stringent requirements if needed?

Pre-bid Job Meetings

The pre-bid job meeting is a very effective tool for the owner or contractor. In this meeting, all bidding contractors should be made aware of the fall protection requirements on the project. By doing this, future difficulties and compliance problems can be minimized.

The following are issues, which should be made clear in this meeting.

1. No contractor should be allowed to bid a job without written proof of a fall protection program.

2. All contractors should be made aware of the minimum fall protection requirements for the job, for example:

    a) 100% fall protection at 6 feet.
    b) Violation of requirements is grounds for immediate removal from project.
    c) Personal fall arrest will be used as a last resort.
    d) Owner must approve the use of fall protection plans.
    e) Owner must approve the use of a warning line system.
    f) Owner must approve the use of a controlled access zones.
    g) Site safety coordinator is responsible to assess fall hazards.
    h) When personal fall arrest is used, the contractor must prove this is the last resort.

3. Contractors must be made aware that failure to comply will bring immediate removal from site, forfeiture of all income for work scheduled to be completed and being barred from ever bidding another job with letting contractor.

Analyzing the Work Area

Key concepts to be discussed within this section include:

1. Review blueprints before work begins.
2. Anticipate upcoming fall hazards as work progresses.
3. Review for Current Hazards on Site.
4. Pre-planning for fall protection checklist.
5. Fall protection options guide.

Review Blueprints Before Work Begins

One of the first steps in analyzing the work area should be the review of blueprints before work ever begins on the site. By addressing fall hazards at this stage, the contractor will be better prepared to provide fall protection to the employees. The following are suggestions to assist contractors in identifying those areas to address.

1. At any stage of the job will there be open sided floors where a fall hazard exists, if so, here are some options:

    a. Can guardrails be installed?
    b. Can safety nets be installed?
    c. If guardrails or nets cannot be installed, will personal fall arrest or restraining systems be employed?

2. Will employees be exposed to floor, or roof openings? If so, will these openings be covered or have guardrails installed around them to protect employees?

3. Is there the possibility of employees being struck by falling objects? If so, will protection be provided?

4. Are scissor lifts required? And is there a system in place to ensure proper inspection and maintenance of these systems?

5. Are roofing operations addressed ahead of time in order to provide fall protection?

6. Is there a fall protection system in place for the installation of exterior sheeting such as:

    a. Vertical lifelines.
    b. Other work methods such as installation from articulating boom lifts.

7. Are there structural members adequate to meet the requirements for anchor points with personal fall arrest systems*?*

8. Are housekeeping measures addressed to avoid possible slip/trip hazards?

9. Additionally, unique fall hazards should be addressed before any exposure.

Anticipate Upcoming Fall Hazards as Work Progresses

The safety director or site fall protection competent person never wants to be caught off guard with surprise hazards or exposures. To avoid, what is known as putting out fires, these individuals must always be prepared. One method is to review the job for the fall hazards that will be present in the future. The following should assist in addressing this issue:

1. Review the blueprints for upcoming processes/hazards.

2. Discuss the work process with project manager, superintendents, architect and workers to identify where new hazards may develop.

3. Ask foreman for assistance in recognizing what hazards may develop in the future.

Review for Current Hazards on Site

If the job has already progressed beyond the point where review of the blueprints will not be effective, than the site must be reviewed for current hazards. The review for current hazards will allow the fall protection competent person to address the fall exposures in order to eliminate or minimize the hazard.

Note: For a complete checklist to review the site for fall hazards please refer to section, "Identifying Common Fall Hazards."

Pre-Planning Checklist

The following is a checklist to assist contractors in their efforts to pre-plan for fall prevention/protection and can be used at any stage of the construction process. It is preferable that this checklist be used before any designing or work ever begins to be most effective in eliminating falls and related injuries.

1. Begin the process by identifying those areas where exposures to falls will or already exist such as:

    - Scaffolds
    - Ladders
    - Roofs (low/steep sloped) and roof openings including skylights
    - Open sided floors and floor openings
    - Steel erection
    - Aerial lift platforms
    - Permanent and temporary working platforms
    - Excavations
    - Leading edges
    - Overhand bricklaying
    - Hoist areas
    - Ramps, runways and walkways
    - Wall openings
    - Stairways
    - Working over dangerous equipment
    - Potential for falling objects
    - Formwork
    - Installation of exterior sheeting/siding
    - Precast and lift slab erection
    - Housekeeping concerns

2. Do you or the contractor have a written fall protection program?

3. If work has begun, or is in progress, have you surveyed the jobsite to identify where/what the fall hazards are on the job?

4. Review the blueprints for fall hazards that are present and likely to develop into a hazard?

5. Is it possible to provide or install fall prevention measures before there's an exposure? Some examples include:

    a. Install guardrails before allowing workers on the floor.
    b. Install safety nets to structural steel before members are lifted into place.
    c. Don't cut floor openings until prepared to fill with specified object.
    d. Sheet exterior walls before standing on upper levels.
    e. Attach a retractable lanyard to the top of a column before standing the column.

6. If possible, specify fall prevention/protection measures when ordering materials, some examples include:

    a. Order stair systems, ramps or walkways with guardrails included.

b. Have the architect locate, specify, design and have installed adequate anchor points for personal fall arrest systems.
c. Order structural steel members with holes adequate to attach snap hooks to for personal fall arrest.

7. Is there a competent person on site in relation to fall protection?

8. Does the competent person on site understand the fall protection standard, trained to select the proper fall protection measures/systems, and understand the differences between the following systems and their use:

    a. Fall Prevention.
    b. Fall Protection.
    c. Active fall protection.
    d. Passive fall protection.

9. Will there be a need for a qualified person? For example, in the development of a job built horizontal lifeline system.

10. Are subcontractors selected on their ability to safely complete the task with a proven track record of providing effective fall protection?

11. Were pre-job and pre-bid meetings held which clearly stated the requirements of the fall protection measures expected from all contractors on the site?

12. Is there an adequate fall protection-training program in place to train employees in the fall protection measures/systems in place on the site?

13. For personal fall arrest systems are anchor points identified and capable of supporting 5,000 pounds per worker or two times the intended impact load (determined by a qualified person)? Additionally, have swing hazards been addressed in the anchor point location?

14. Has an enforcement policy been established, and if so, is it communicated, accepted and enforced?

15. Have rescue methods and procedures been addressed in the event of a fall?

16. Are employees selected and trained to work at heights safely?

17. Have other work methods been proposed or implemented such as:

    a. Connecting steel or concrete from articulating boom lifts.
    b. Assembling structures on the ground and lifting them into place, minimizing exposure.
    c. Installing safety nets or horizontal lifelines on the ground before workers are exposed.

d. Installing clamp-on guardrails around roof edge instead of using a warning line system.

18. Have free fall considerations been addressed including:

a. Total free fall clearances are adequate for system in use.
b. Employees will not strike lower objects in the event of a fall.
c. Employees will not be exposed to forces greater than 1,800 foot pounds in a full body harness.

Fall Protection Options Guide

OSHA regulations require protection when workers are exposed to falls of 6 feet or more. The regulations define the specific hazards and outline acceptable ways of providing protection for these hazards. Some of the exposures discussed within this manual are listed below with a list of fall protection systems available to contractors.

Employees Working Over Dangerous Equipment (regardless of fall distance)

- Guardrail system
- Safety net system
- Personal fall arrest system

Excavations

- Guardrail system
- Fences
- Barricades

Formwork and Reinforcing Steel

- Safety net system
- Personal fall arrest system
- Positioning system

Hoist Areas

- Guardrail system
- Safety net system
- Personal fall arrest system
- Fall restraint system

Holes

- Covers
- Guardrail system
- Safety net system
- Personal fall arrest system
- Fall restraint system

Leading Edges

- Guardrail system
- Safety net system
- Personal fall arrest systems
- Fall restraint system
- Fall protection plan

Overhand Brick Laying

- Guardrail system
- Safety net system
- Personal fall arrest system
- ***Controlled access zone***

Precast Concrete Erection

- Guardrail system
- Safety net system
- Personal fall arrest system
- Fall protection plan

Floor/Roof Openings

- Hole covers
- Guardrail system
- Personal fall arrest system
- Fall restraint system

Roofing Work (low sloped roof)

- Guardrail system
- Safety net system
- Personal fall arrest system
- Safety monitor system (if roof is 50 feet or less in width)
- Warning line/safety monitor system
- Warning line/guardrail system
- Warning line/safety net system
- Warning line/personal fall arrest system
- Warning line/fall restraint system

Roofing Work (steep sloped roofs)

- Guardrail system
- Safety net system
- Personal fall arrest system

Unprotected Sides and Edges

- Guardrail systems
- Safety net systems
- Personal fall arrest systems
- Fall restraint systems

Ramps, Runways and other Walkways

- Guardrail system
- Personal fall arrest system
- Safety net system

Wall Openings

- Guardrail system
- Safety net system
- Personal fall arrest system
- Fall restraint system

Rescue Plans and Procedures

Key issues to be discussed within this section include:

1. Considering emergency situations.
2. Addressing communication issues.
3. Self rescue, and other rescue methods.
4. Coordination with off-site EMS.
5. Have on-site, trained personnel.
6. Practice sessions.

Consider Emergency Situations

One of the first areas to focus in developing a rescue plan is the consideration of all possible emergency situations. Contractors need to identify all possible areas and situations in which a possible fall may take place. The following are some areas where emergency situations may develop:

1. Falls from scaffolding, including landing on the floor or being caught in the framework.
2. Falls from ladders.
3. Falls while wearing personal protective equipment. If employees are allowed to wear a body belt, can the rescue be completed within 60 seconds.
4. Falls from elevated work areas in personal fall arrest. What will be used for access to the employee?
5. Falls into vessels, tanks or drainage assemblies.
6. Falls from scissor and boom lifts.
7. Falls over water while wearing personal fall arrest. What method will be used to gain access to fallen employee?
8. Falls onto dangerous materials or equipment such as an impalement hazard with rebar.

9. Be sure to address possible fall hazards like employees being hit by falling materials.

10. Address any unique fall hazards on the job in these emergency situations.

Address Communication Issues

The issue of communication in the event of a fall is often overlooked. The employer should have an established procedure and method to effectively communicate vital information in the event of an emergency. The following should assist contractors in developing a communication system:

1. What methods will be used to communicate in an emergency?
    a) Two way radios
    b) Telephones
    c) Cellular phones

2. Who is responsible to contact Emergency Medical Assistance?
    a) Project manager
    b) Superintendent
    c) Foreman
    d) Safety professional
    e) Discovering employee

3. Is there a chain of command for emergency notification? (For example)
    a) Notify safety professional first
    b) Safety professional notifies project manager
    c) Project manager notifies hospital
    d) Project manager notifies owner
    e) Project manager notifies insurance carrier
    f) Project manager/safety professional meet ambulance personnel
    g) Project manager/safety professional notifies family of accident

4. Who is responsible to communicate vital information to emergency personnel?
    a) Safety professional
    b) Project manager
    c) Any eyewitnesses to accident

5. Who is responsible to report information to the insurance carrier?
    a) Safety professional
    b) Project manager

Self Rescue and Other Rescue Equipment

Once the fall has taken place the employee has two options, to rescue themselves or rely on rescue from other personnel. There may be situations where employees may be able to rescue themselves,

but more than likely external rescue methods must be employed. The following are some methods which may be used as a rescue procedure:

1. Self rescue procedures could employ some of the following:
    a) Block and tackle assembly
    b) An automatic descent device as used on some tower cranes
    c) Friction devices available from equipment manufacturers to slowly lower an employee

2. Possible access can be gained to a fallen employee by the following methods:
    a) By double sided ladder
    b) From a scissor lift
    c) From a boom lift
    d) From a man basket suspended by a crane
    e) By a block and tackle/rope grab system designed for personnel rescue

3. Should employees fall into a vessel, tank or plumbing, the following could be used for rescue:
    a) A rescue winch operated from the surface (this is very difficult if the rescue line is not attached before the fall)
    b) Wrist grabs can be attached to the fallen employee to secure the victim
    c) Victim can be hoisted with a winch or come-along while in a stretcher

Coordination with Off-Site Emergency Medical Services (EMS)

In situations where the employer is very close to a rescue team such as a fire department they may specify that all rescues will be handled by such a specialized team. If the employer has allowed the use of body belts, this may still take too long to minimize the possibility of serious injury to fallen personnel. The following issues should be considered when selecting this option:

1. If all personnel are wearing a full body harness, will EMS arrive within 5 to 10 minutes of a fall?

2. If answer to question #1 is no, what rescue methods will be employed?

3. Has the site safety professional communicated with local EMS of the possibility of falls on the site, and is the local EMS equipped for such an emergency?

4. If off-site EMS are capable of handling such an emergency, have their suggestions and recommendations been followed?

5. If personnel are wearing body belts what measures will be taken to rescue the fallen individual immediately to avoid additional injuries resulting from suspension in a dangerous position?

On-Site Trained Personnel

In the event that off-site EMS are too far away, or are not equipped to mount a rescue it is very important that the employer have trained qualified personnel on site to effect a rescue. These trained personnel should meet the following guidelines:

1. Rescue personnel should be trained and experienced in the rescue procedures and equipment to be used on the site.

2. Are rescue personnel American Red Cross CPR certified?

3. Are rescue personnel American Red Cross “First Aid” certified?

4. Are rescue personnel physically fit and capable of completing a rescue?

5. Are there qualified personnel on site for each shift of the project?

Practice Sessions

In order for an employer to truly be prepared to rescue a fallen employee, practice sessions must be incorporated into the overall program. The following are key issues to address during practice sessions:

1. Were rescue personnel at the fall location in the proper time?

2. Was rescue equipment used correctly?

3. Was the rescue completed as quickly and safely as possible?

4. Were all communication issues handled correctly?

5. If there were deficiencies, address these areas and constantly improve the system.

Identifying Common Fall Hazards

Key issues to be discussed within this section include:

1. Fall hazards associated with scaffolding.
2. Fall hazards associated with ladders.
3. Fall hazards associated with roofs, including skylights.
4. Falls from one level to the next working surface to ground.
5. Fall hazards during steel erection.
6. Fall hazards during concrete work (including formwork, precast and overhand brick laying).
7. Other work surfaces (slips, trips, falls, picks, lifts, platforms and housekeeping).

The following are lists of areas that contractors can focus upon which can contribute to falls from each area. Effectively controlling and/or eliminating these deficiencies should reduce the occurrences of these falls.

Scaffolding

An average of 89 workers are killed from falling from scaffolds each year (BLS). The majority of the workers injured in scaffold accidents attribute the accident either to the planking or support giving way, or to the employee slipping or being struck by a falling object. One of the most frequently cited OSHA violations is lack of fall protection on scaffolds. When conducting job hazard analysis on scaffolds, consider these questions:

1. Is a competent person present during the erection, alteration, movement and disassembly of the scaffold system?
2. Are all scaffold systems inspected on a regular basis?
3. Are scaffold systems erected in accordance with manufacturers recommendations?
4. Is equipment being used for ways it was not intended?
5. Is the scaffold base erected on a firm foundation, or adequate sill/pad?
6. Is the scaffold system plumb, level, rigid and square?
7. Are all cross/support braces properly installed?
8. Are all scaffold components compatible with each other?
9. Are all pins, clips and locking mechanisms installed and operating correctly?

10. If required, is the scaffold system secured/tied to the wall or structure at the proper intervals? (30' horizontal/24' vertical)
11. Are outriggers installed on freestanding scaffolds, which exceed 4 times their minimum base width vertically (in some state plans it is 3 times the base width), and are they locked into place?
12. Is a safe means of access provided to the working level via a ladder, ramp or stairway?
13. Are guardrails or other forms of fall protection provided when employees are exposed to a fall in excess of the Subpart "L" standard?
14. Is the working surface properly planked/decked with scaffold grade material?
15. Is the working surface, guardrails, and access/egress maintained in a clean and non-slippery condition to avoid slip hazards?
16. Is the scaffold system overloaded?
17. For suspended scaffolds, are the pulley, motor, anchor and fall protection systems in place and operating correctly?
18. Is rigging correct on the suspended scaffold system?
19. Are the tiebacks sized, installed, anchored and inspected to ensure their effectiveness?
20. Are all inspection requirements recommended by the manufacturer being performed?
21. Are heavy loads placed over bearing portions of the scaffold assembly, and not in the center of the work surface?
22. Are all defective scaffold components tagged and immediately removed from service to be repaired or destroyed?
23. Are employees trained on scaffold use, erection and inspection?

Scaffold Hazard Identification

Picture courtesy UBC

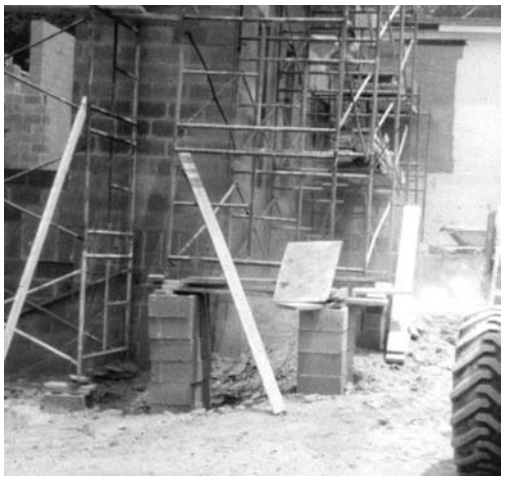
1926.451(f) – Scaffold Use

(3) Scaffolds and scaffold components shall be inspected for visible defects by a competent person before each work shift, and after any occurrence which could affect a scaffold's structural integrity.

(4) Any part of a scaffold damaged or weakened such that its strength is less than that required by paragraph (a) of 1926.451 shall be immediately repaired or replaced, braced to meet those provisions, or removed from service until repaired.

1926.451(c) – Criteria for Supported Scaffolds

(2) Supported scaffold poles, legs, posts, frames, and uprights shall bear on **base plates** and mud sills or other adequate firm foundation.



Picture courtesy UBC

1926.451(c) – Criteria for Supported Scaffolds

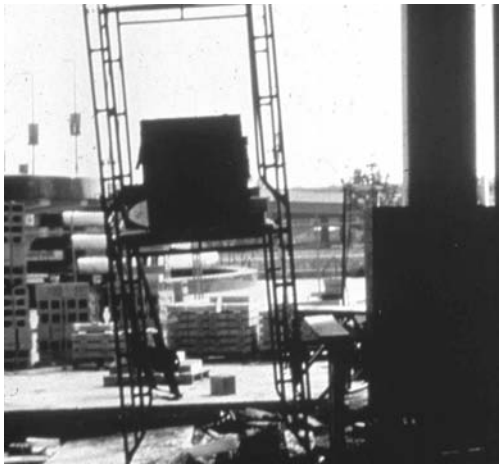
(2)(ii) Unstable objects shall not be used to support scaffolds or platform units.

1926.451(c) – Criteria for Supported Scaffolds

(2)(iv) Front-end loaders and similar pieces of equipment shall not be used to support scaffold platforms unless they have been specifically designed by the manufacturer for such use.

OSHA Standard Interpretation, 09/30/1999 – Forklifts in construction: elevating personnel and operator training.

"Powered industrial trucks, which include forklifts, as well as rough terrain forklifts, are similar pieces of equipment to forklifts and front end loaders in this context. Therefore, they fall within the requirements of 1926.451(c)(2)(iv)."



Picture courtesy UBC

1926.451(c) – Criteria for Supported Scaffolds

(3) Supported scaffold poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement.

1926.451(e) – Scaffold Access

(1) When scaffold platforms are more than 2 feet above or below a point of access, portable ladders, hook-on ladders, attachable ladders, stair towers, stairway-type ladders, ramps, walkways, integral prefabricated scaffold access, or direct access from another scaffold, structure, personnel hoist, or similar surface shall be used. **Crossbraces shall not be used as a means of access.**

Picture courtesy UBC

Picture courtesy UBC

1926.451(g) – Scaffold Fall Protection

(4)(i) Guardrail systems shall be installed along all open sides and **ends** of platforms. Guardrail systems shall be installed before the scaffold is released for used by employees other than erection/dismantling crews.

1926.451(b) – Scaffold Platform Construction

(1) Each platform on all working levels of scaffolds shall be fully planked or decked between the front uprights and the guardrail supports as follows:

(i) Each platform unit shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 1 inch wide, except where the employer can demonstrate that a wider space is necessary.

Picture courtesy UBC

Picture courtesy UBC

1926.451(b) – Scaffold Platform Construction

(3) Except as provided in paragraphs (b)(3)(i) and (ii) of this section, the front edge of all platforms shall not be more than 14 inches from the face of the work, unless guardrail systems are erected along the front edge and/or personal fall arrest systems are used in accordance with paragraph (g) of this section to protect employees from falling.

(4) Each end of a platform, unless cleated or otherwise restrained by hooks or equivalent means, shall extend over the centerline of its support at least 6 inches.

1926.451(f) – Scaffold Use

(15) Ladders shall not be used on scaffolds to increase the working level height of employees, except on large area scaffolds where employers have satisfied the criteria listed in 1926.451(f)(15)(i)-(iv).

Picture courtesy UBC

Picture courtesy UBC

1926.451(f) – Scaffold Use

(12) Work on or from scaffolds is prohibited during storms or high winds unless a competent person has determined that it is safe for employees to be on the scaffold and those employees are protected by a personal fall arrest system or wind screens. Wind screens shall not be used unless the scaffold is secured against the anticipated wind forces imposed.

Ladders

Falls from ladders account for approximately 100 fatalities each year (BLS). Ladders can be found on every jobsite and are used by all trades. Some of the most frequently cited serious ladder violations are; not securing a portable ladder or having it extended 3 feet above the upper landing before workers use it to reach an upper level, not providing a training program for workers on the proper construction, inspection, maintenance, care, use, and limitations of ladders, and not marking or tagging a defective ladder so that it would not be used before it has been repaired. The requirements for ladders can be found in Subpart X of the Construction Safety and Health Standards. When analyzing work areas for proper ladder use, consider the following questions:

1. Is the correct ladder for the job being used?
2. Are ladders inspected before use?
3. Are metal ladders prohibited near electrical sources?
4. Are stepladders being placed against the wall, in a closed position, which can cause them to slide out from underneath a worker?
5. Are extension ladders secured at the top, and the bottom if possible?
6. Is the extension ladder installed at the correct angle (the 1 to 4 rule)?
7. Do side rails extend 3' above the working surface?
8. Are ladders being overloaded?
9. Is the extension ladder overextended?
10. Are materials being hoisted by a line, and not by the individual climbing the ladder?
11. Is the three-point-contact rule being followed? (i.e. both feet and one hand or both hands and one foot)
12. Never allow two ladders to be tied together!
13. Are all damaged ladders immediately tagged and repaired or destroyed?
14. Are ladder feet placed on a firm foundation?
15. Are proper climbing/working procedures being followed?
16. Never allow an individual to “bounce” or “walk” a stepladder to move it!
17. Are stepladders used in the fully open position only?
18. Are individuals working on the correct side of a stepladder?
19. Are all hinges, spreaders, locks and feet on ladders in serviceable condition?
20. Never allow any ladder to be used in the horizontal position as a scaffold plank or work platform!
21. Are ladders with broken or missing rungs or split side rails, tagged and taken out of service or destroyed?
22. Are access/egress areas around the top and bottom of the ladder kept clear?
23. Are all ladders inspected regularly?
24. Are filler blocks placed between the cleats of job made ladders?
25. Where simultaneous two-way traffic can be expected, is there a double cleat ladder installed?
26. Does the design and assembly of the job built ladder meet the requirements of ANSI Standard A14.4?

Ladder Hazard identification

1926.1053(a) – Ladders, General

(8) A metal spreader or locking device shall be provided on each stepladder to hold the front and back sections in an open position when the ladder is being used.

1926.1053(a) – Ladders, General

(7) Ladders shall not be tied or fastened together to provide longer sections unless they are specifically designed for such use.

1926.1053(b) – Ladder Use

(1) When portable ladders are used for access to an upper landing surface, the ladder side rails shall extend at least 3 feet (.9 m) above the upper landing surface to which the ladder is used to gain access; or, when such an extension is not possible because of the ladder's length, then the ladder shall be secured at its top to a rigid support that will not deflect, and a grasping device, such as a grabrail, shall be provided to assist employees in mounting and dismounting the ladder. In no case shall the extension be such that ladder deflection under a load would, by itself, cause the ladder to slip off its support.

1926.1053(b) – Ladder Use

(6) Ladders shall be used only on stable and level surfaces unless secured to prevent accidental displacement.

1926.1053(b) – Ladders Use

(13) The top step of a stepladder shall not be used as a step.

(14) Cross-bracing on the rear section of stepladders shall not be used for climbing unless the ladders are designed and provided with steps for climbing on both front and rear sections.

Manufacturers are required to display this marking on self-supporting stepladders (ANSI Standard A14.2).

1926.1053(b) – Ladder Use

(15) Ladders shall be inspected by a competent person for visible defects on a periodic basis and after any occurrence that could affect their safe use.

(16) Portable ladders with structural defects, such as, but not limited to, broken or missing rungs, cleats, or steps, broken or split rails, corroded components, or other faulty or defective components, shall either be immediately marked in a manner that readily identifies them as defective, or be tagged with "Do Not Use" or similar language, and shall be withdrawn from service until repaired.

1926.1053(b) – Ladder Use

(21) Each employee shall use at least one hand to grasp the ladder when progressing up and/or down the ladder.

(22) An employee shall not carry any object or load that could cause the employee to loose balance and fall.

Roofing Including Skylights

Falls from roofs are responsible for approximately 120 deaths each year in the construction industry. Roofing, siding, and sheet metal contractors have the highest incident rate of nonfatal occupational injuries resulting from a fall to a lower level and involving days away from work at 110.4 for every 10,000 full-time workers. When conducting a job hazard analysis on roofing work, consider the following questions:

1. Are all skylight/roof openings protected by covers or guardrails?

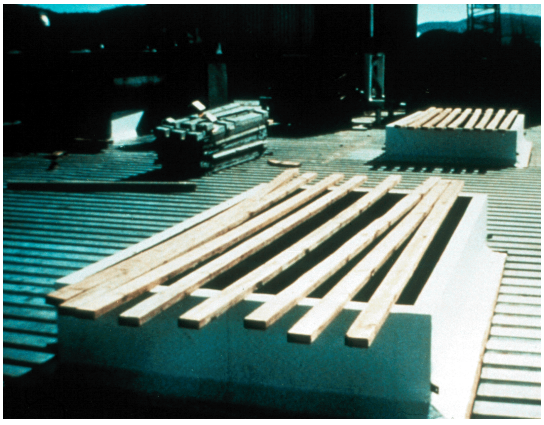
Note: Most glass or plastic covers on skylights will not meet the structural requirements of a cover, check with the manufacturer. To be safe the installation of a proper cover or guardrail is recommended.

2. Is there a warning line in place?
3. Is there a safety monitor on the roof in visual/verbal range of employees?
4. Is all mechanical equipment kept inside the warning line?
5. Is the hoist area protected with a guardrail system?
6. Are employees below the hoist area protected from falling objects/material?
7. Are guardrails, safety nets or personal fall arrest systems in use on roofs that exceed a 4/12 pitch?
8. Are employees working on surfaces, which are hazardous because of poor footing due to frost, ice, or mildew?
9. Are employees working in hazardous conditions such as high winds, poor visibility or inclement weather?
10. Is there a safe/secure access to the roof via stairs or a secured ladder?

Roof Hazard Identification

1926.501(b) – Unprotected Sides and Edges

(4) Each employee on a waling/working surface shall be protected from falling through holes (including skylights) more than 6 feet above lower levels, by personal fall arrest systems, covers, or guardrail systems erected around such holes.



1926.502(i) – Hole Covers

(3) All covers shall be secured when installed so as to prevent accidental displacement by the wind, equipment, or employees.

1926.502(i) – Hole Covers

(2) All hole covers shall be capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time.

Falls From a Floor (one level to the next)

1. Are all holes covered with structurally appropriate, marked and secured covers?
2. Are all exposed edges protected with a guardrail system?
3. Where guardrails are not installed are personal fall arrest, safety nets or fall restraining systems in place and being used?
4. Are windows or wall openings, where the lower sill is below 39 inches from the walking/working surface, protected with a guardrail system?
5. Are removable sections of guardrails for incoming materials replaced and structurally sound after materials are loaded?
6. When guardrails are removed for incoming material, are alternate fall protection measures being used (i.e., personal fall arrest, fall restraint or safety nets)?
7. Are toe boards installed to protect employees below from falling objects?

Falls From a Floor Hazard Identification

1926.501(b)(4) – Holes

(i) Each employee on walking/working surfaces shall be protected from falling through holes more than 6 feet above lower levels…

(ii) Each employee on a walking/working surface shall be protected from tripping in or stepping into or through holes by covers.

(iii) Each employee on a walking/working surface shall be protected from objects falling through holes by covers.

Removable sections of guardrails for incoming materials must be replaced and structurally sound after materials are loaded.

1926.502(b) – Guardrail Systems

(3) Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds applied within 2 inches of top edge, in any outward or downward direction, at any point along the top edge.

Steel Erection

1. Are the workers performing the steel erection trained and qualified for this task?
2. Can fall protection systems be installed on the ground before the steel is erected (i.e., horizontal life lines, retractable lanyards or safety nets)?
3. Is the erection process so designed as to minimize the possibility that the connectors will have to move suddenly to avoid any unwanted contact with incoming members?
4. Can the erection/connecting process be completed from scissor or boom lifts, thus eliminating unwanted fall exposures?
5. Can sections of the structure be assembled on the ground and lifted into place as a unit, which will minimize the fall exposures?
6. Are tag lines being used to prevent incoming members from inadvertently swinging and creating a hazard to the connectors?
7. Are temporary connections adequate to support the intended load?

Concrete

1. Are all workers performing the erection process trained and qualified for the task?
2. Can fall protection systems be installed on the ground before the members are erected into place (i.e., life lines, safety nets and retractable lanyards)?
3. Is the erection process so designed as to minimize the possibility that the connectors will have to move suddenly to avoid any unwanted contact within coming members?
4. Can the erection/connecting process be completed from scissor or boomlifts, eliminating unwanted fall exposures?
5. Are positioning systems being used on formwork?
6. Are guardrails installed on formwork, where appropriate?
7. Is the appropriate controlled access zone established for overhand brick laying and/or precast operations?
8. Is formwork and shoring adequate to support the intended loads?
9. Are all impalement hazards, such as rebar, covered, protected or bent over to eliminate the impalement hazard?

Concrete Hazard Identification

1926.501(b)(12) – Precast Concrete Erection

Each employee engaged in the erection of precast concrete members and related operations such as grouting of precast concrete members, who is 6 feet or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems, unless another provision in paragraph (b) of this section provides for an alternative fall protection measure.

Other Work Surfaces

1. Is the walking/working surface inspected and structurally capable of supporting the workers and equipment in the area?
2. Is the walking/working surface kept clean of slip hazards such as ice, oils, mold/mildew or any other material, which hinders good traction?
3. Are all picks, platforms or temporary work surfaces secure and provided with fall protection (i.e., guardrails, safety nets, personal fall arrest systems or fall restraint)?
4. Are all scissor/boom lifts inspected daily and operated in accordance with the manufacturers recommendations?
5. Are all gates/chains being used and secured on scissor/boom lifts?
6. Is the site being regularly cleaned up to avoid slip/trip hazards?
7. Are there guardrails on ramps or runways where the fall exposure exceeds 6 feet?
8. Are stairways in good condition with appropriate railing systems installed?
9. Are hollow pan stair treads filled in with solid material to eliminate tripping?
10. Are excavations provided with fall protection where required, by the use of guardrails, fences or barricades?

Other Work Surface Hazard Identification

1926.453(b)(2) – Aerial Lifts, Specific Requirements for Extensible and articulating Boom Platforms

(iv) Employees shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.

(v) A full body harness shall be worn and a lanyard attached to the boom or basket when working from an aerial lift.

1926.25 – Housekeeping

(a) During the course of construction, alteration, or repairs, form and scrap lumber with protruding nails, and all other debris, shall be kept cleared from work areas, passageways, and stairs, in and around buildings or other structures.

Conventional Fall Protection Systems

Key systems to be discussed within this section include:

1. Guardrail Systems
2. Hole Covers
3. Safety Nets
4. Personal Fall Arrest Systems
5. Positioning Systems
6. Personal Fall Restraint Systems

Conventional fall protection systems could be broken down into two categories, active fall protection systems and passive fall protective systems. The difference between the two systems is the amount of worker involvement in determining the proper installation and use of the systems. A consideration when choosing conventional fall protection is whether the fall hazard is eliminated (fall prevention) or controlled (fall protection). A fall prevention system that limits worker involvement and eliminates the fall hazard, for example guardrails, is the preferred method for providing worker protection against falls.

Conventional Fall Protection

Active Fall Protection Systems

- Personal Fall Arrest Systems
- Positioning Systems
- Personal Fall Restraint Systems*

Passive Fall Protection Systems

- Guardrail Systems*
- Hole Covers*
- Safety Nets

* Eliminates fall hazards (fall prevention)

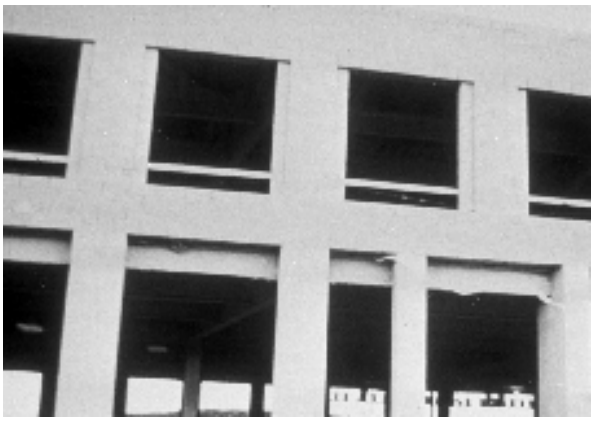
Guardrail Systems

Guardrails are one of the most common forms of fall protection seen on the construction site. The OSHA standard requires that guarding or some form of fall protection must be provided when an employee is exposed to a fall of 6 feet or more. The following areas lend themselves to the installation of guardrail systems for fall prevention.

1. Along the edge of all open sided floors or edges where a fall exposure exists.
2. On work platforms where a fall exposure exists.
3. On stair systems.
4. Around floor and roof openings.
5. Around holes too large to place covers over.
6. Around the exterior of a roof during roofing work.
7. On articulating/elevating work platforms.
8. Near window openings where the sill is lower than 39 inches.
9. In an area/edge where a possible fall would allow an employee to strike dangerous equipment or material, regardless of the fall distance.
10. On access ways, ramps or catwalks where there is a fall exposure.
11. Parapets less than 39" in height.

General Requirements of Guardrail Systems

- The top edge of the guardrail system shall be 42 inches, ±3 inches, above the walking/working surface.
- Midrails must be installed between the top edge of the guardrail system and the walking/working surface.
- The guardrail system must be capable of withstanding a 200-pound force applied to the top rail in an outward or downward direction.
- When the 200-pound force is applied the top rail cannot deflect to a height less than 39 inches above the walking/working surface.
- All midrails, screens, mesh, intermediate vertical members or panels must be able to withstand a 150-pound force in a downward or outward direction.
- Where employees will be using stilts, the height of the top rail must be increased a height equal to the height



Where parapet walls or windowsills do not extend at least 39 inches above the walking/working surface, precautions must be taken to ensure proper guardrails are in place.

of the stilts which in effect serve as the walking/working surface.

- All guardrail systems must be smooth surfaced.
- Steel or plastic banding can NEVER be used in a railing system.
- Avoid using manila, plastic or synthetic rope because they must be inspected often and may deteriorate rapidly.

Elevator shafts and other similar wall openings must be protected against fall hazards.

Wire Rope Guardrails

1. Must be made from ¼ inch diameter cable or larger.
2. Must be flagged every 6 feet with a high visibility material like caution or surveyors tape.

Wire rope guardrails must be flagged every 6 feet for visibility.

Wood guardrails must be made of at least 2”x4”s with spans not greater than 8 feet on center.

Appendix B to Subpart M - Guardrail systems

The standard requires guardrail systems and components to be designed and built to meet the requirements of 1926.502 (b) (3), (4) and (5). An employer may use these guidelines as a starting point for designing guardrail systems. However, the guidelines do not provide all the information necessary to build a complete system, and the employer is still responsible for designing and assembling these components in such a way that the completed system will meet the requirements of the above stated references.

Walkways over excavations that are 6 feet or more in depth must be guarded to prevent falls.

1. **For Wood Railings:** Wood components shall be a minimum 1500 lb. ft./in ^{2} fiber (stress grade) construction grade lumber; the posts shall be at least 2" x 4"s no more than 8 feet on center; the top rail shall be at least 2" x 4" material, and the midrails shall be at least 1" x 6" material.
2. **For Pipe Railings:** Posts, toprails and midrails shall be at least one and one half (1.5) inch nominal diameter schedule 40 pipe, with posts spaced no more than 8 feet on centers.
3. **For Structural Steel Railings:** Posts, toprails and midrails shall be at least 2-inch by 2- inch by 3/8-inch angle, with posts spaced not more than 8 feet on center.

Note: For wire rope guardrails there is no requirement that terminal supports are maintained every 8 feet on center, but when tested in the center with the 200 pound force the toprail must never deflect below 39 inches from walking/working surface.

Hole Covers

Hole covers are another method an employer may use to protect against falls. According to the OSHA definition, a hole is any opening measuring 2 inches or more in its least dimension in a floor, roof or walking surface. The following guidelines should assist in the placement of hole covers.

1. Place covers over all holes on the site, for larger holes guardrail systems are an option.
2. Construct the covers to support two (2) times the weight that will cross over them. This includes employees, equipment, tools and all construction vehicles, such as scissor lifts.
3. If plywood is used as a hole cover it must be at least 3/4 inch thick.
4. All covers must be secured. Cleats, wire, nails or any other method, which will not allow the cover to be displaced, can do this.
5. After the cover is placed, write the word hole or cover on it for identification. This can be easily done with a can of spray paint.
6. If the cover it too small to write "hole" on it, then they must be color coded for identification and employees must be trained to recognize what the color is identifying.

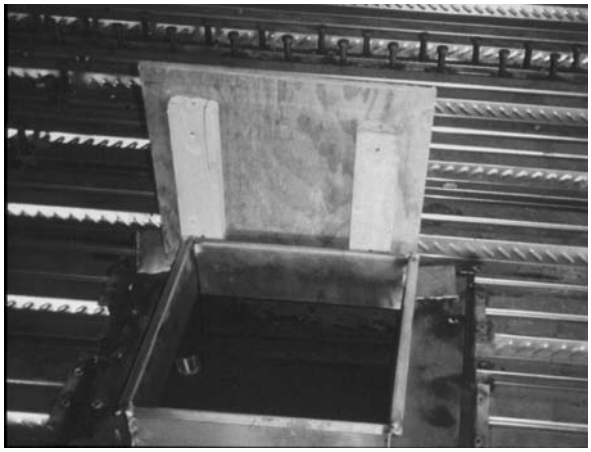
General Requirements for Hole Covers

1. When the cover is placed in a roadway, or area where any vehicles may pass, the cover must be designed to support two times the maximum axle load of the largest vehicle expected to cross.
2. In all other areas, the covers shall be designed to support twice the weight of employees, equipment, and materials that may be imposed on the cover at one time.
3. All covers must be secured when installed so that wind, equipment or employees will not displace them. Cleating, wiring them down or nailing to secure the covers can do this.
4. All covers must be color-coded or have the word "hole" or "cover" written on them. This is to identify them to employees so they are not removed. If a color-coding scheme is used, then training as to what the color means must be provided to all those exposed to the fall hazard.

Hole covers must be color-coded or marked "Hole" or "Cover" so as they can be identified as being hole covers.

5. If plywood is used to cover holes, it should be at least 3/4 inch thick.
6. Install the covers so as to eliminate any tripping hazard.

Hole covers must be designed to support two times the maximum axle load of the largest vehicle expected to cross over it.



Cleats may be used to prevent displacement of hole covers. If uplift can occur, wiring or nailing them down may be necessary.

Safety Net Systems

The installation of a safety net does not keep an employee from falling; rather they catch the employee after the fall. They are though, similar to guardrails and covers in the respect that these three systems are recognized as passive fall protection. In other words, they are always in place to provide fall protection. Safety nets are commonly installed in the following ways.

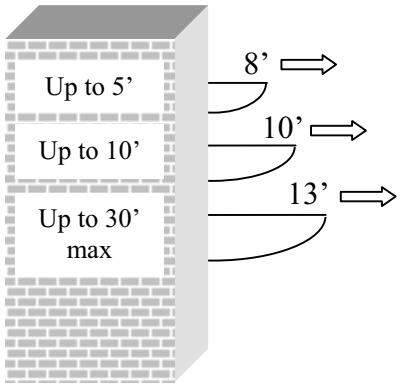
1. Safety nets are used during steel erection. To provide the best protection, the erector should assemble as much of the structure on the ground. Once assembled, the safety nets are installed before the section is lifted into place and secured.
2. During bridgework. Nets can be installed in the same manner as above, or in the event of reconditioning work the nets should be installed from boom lifts, man baskets or employees utilizing personal fall arrest systems.
3. During demolition or maintenance work. Safety nets can be designed to provide personal fall protection, and to collect falling debris.
4. In any event, the installation of safety nets must be done by individuals protected from the fall hazards they are exposed to during the installation.
5. Safety nets are also acceptable means of fall protection for holes, open sided floors, catch platforms and steel/concrete erection.
6. Make certain the safety net is designed for this purpose and is serviceable.

General Requirements for Safety Nets

Safety nets used for fall protection are specifically designed for this purpose and must meet the following requirements:

1. They must be installed as close as possible under the walking/working surface, but in no case will an employee be exposed to a fall of greater than 30 feet.
2. Safety nets must extend outward from the outer most edge of the work surface in accordance with the requirements listed in 1926.502 (c) (2).
3. The nets must be installed in a manner that should an individual fall, they will not strike any object below the net.
4. Safety nets, and their installation, must be tested with a 400 pound bag of sand as specified in 1926.502 (c) (4) (i) of the standard.
5. When the employer can demonstrate that it is unreasonable to perform the drop test he shall certify the net and net installation following 1926.502 (c) (4) (ii) of the standard.
6. Defective safety nets will not be used.
7. Safety nets must be inspected weekly for wear, damage and any deterioration.
8. Nets must be inspected after any occurrence which could effect its integrity, such as a steel member falling into the net.
9. Any materials, scrap, tools or equipment that falls into the net must be removed as soon as possible but no later than the end of the work shift.
10. The safety net design and connections shall comply with 1926.502 (c) (7), (8) and (9).

Safety Net Extension
(On the exterior of the structure)



Nets must be installed in a manner that should an individual fall, they will not strike any object below the net (picture courtesy of DBI/Sala).

Any materials, scrap, tools or equipment that falls into the net must be removed as soon as possible but no later than the end of the work shift.

Each net shall be permanently labeled with the following information:

1. Name of Manufacturer
2. Identification of net material
3. Date of manufacture
4. Date of prototype test
5. Name of testing agency
6. Serial number

Personal Fall Arrest Systems/Equipment

The personal fall arrest systems used in construction should be used as a last resort. The contractor should focus on fall prevention methods first such as guardrails or hole covers. If after all pre-planning for fall prevention still leaves a fall exposure then a personal fall arrest system could be implemented. The following are some key concerns when implementing a personal fall arrest option.

1. Only a full body harness with a retractable or shock-absorbing lanyard and locking snap hook is used.
2. Anchor points for tying off needs to be structurally sound.
3. Employees are constantly tied-off when in the area of a fall hazard.
4. All personal fall arrest equipment needs to be inspected according to the manufacturers directions.
5. The system needs to be installed/designed to limit the free fall to 6 feet.
6. Fall forces must be within acceptable limits.
7. Any additional hazards that could arise in the event of a fall needs to be eliminated.
8. A rescue plan needs to be in place in the event of a fall.
9. Employees need to be trained in the use of the personal fall arrest systems.

General Requirements for Personal Fall Arrest Systems

Personal fall arrest systems have been used in construction for a number of years. Some key points to remember include the following:

1. Full body harnesses with the D-ring positioned in the middle of the back must be used.
2. Snaphooks must be the double locking type.

Note: The use of body belts in a positioning device system is acceptable and is regulated under positioning systems.

1. Connectors shall be drop forged, pressed or formed steel, or made of equivalent materials.
2. Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the system.
3. D-rings and snaphooks shall have a minimum tensile strength of 5,000 pounds.
4. D-rings and snaphooks shall be proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or taking permanent deformation.
5. Only locking type snaphooks shall be used.

Snaphooks must be double locking and only attached to approved anchorage points (picture courtesy DBI/Sala).

Full body harnesses with D-rings positioned in the middle of the back must be used for personal fall arrest.

6. Unless the snaphook is designed for the following connections, snaphooks shall not be engaged:
    a) Directly to webbing, rope or wire rope.
    b) To each other.
    c) To a D-ring to which another snaphook or other connector is attached.
    d) To a horizontal lifeline.
    e) To any object in which its shape or dimension is incompatible in relation to the snaphook such that unintentional disengagement could occur by the connected object being able to depress the snaphook keeper and release itself.

Unless approved by the manufacturer, snaphooks must not be attached to each other. Also, body belts are not used for personal fall arrest.

Unless approved by the manufacturer, snaphooks must not be tied back onto its own lanyard.

An example of an approved method to tie back a snaphook onto its own lanyard.

7. On suspended scaffolds or similar work platforms with horizontal lifelines that may become vertical lifelines, the devices used to connect to a horizontal lifeline shall be capable of locking in both directions on the lifeline.
8. Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.
9. Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds.
10. When vertical lifelines are used, each employee shall be attached to a separate lifeline. During the construction of elevator shafts, two employees may be attached to the same lifeline in the hoistway, provided both employees are working atop a false car that is equipped with guardrails; the strength of the lifeline is 10,000 pounds [5,000 pounds per employee attached]; and all other criteria specified in this paragraph for lifelines have been met.
11. Lifelines shall be protected against being cut or abraded.
12. Self-retracting lifelines and lanyards which automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.
13. Self-retracting lifelines and lanyards which do not limit free fall distance to 2 feet or less, ripstitch lanyards, and tearing and deforming lanyards shall be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.

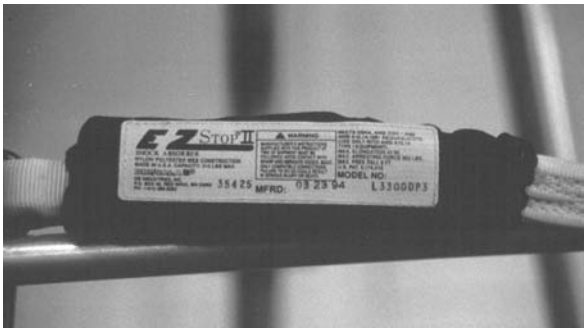
Lifelines must be designed to support 5,000 pounds per worker attached and protected against being cut or abraded (picture courtesy DBI/Sala).

Talon™ by DBI/Sala

Mini Lite™ by Miller

Self-retracting lanyards come in variety of lengths and styles. They are lightweight and allow worker mobility while being protected from falls.

14. Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body belts and body harnesses shall be made from synthetic fibers.
15. Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached, or shall be designed, installed, and used as follows:
    a) As part of a complete personal fall arrest system which maintains a safety factor of at least two.
    b) Under the supervision of a qualified person.
16. Personal fall arrest systems, when stopping a fall, shall:
    a) Limit maximum arresting force on an employee to 1,800 pounds when used with a full body harness.
    b) Be rigged such that an employee can neither free fall more than 6 feet nor contact any lower level.
    c) Bring an employee to a complete stop and limit maximum deceleration distance to 3.5 feet.
    d) Have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet, or the free fall distance permitted by the system, whichever is less.



Shock-absorbing packs and lanyards will limit the fall forces subjected to someone who has fallen. They also increase the fall distance, so consideration must be taken to ensure proper clearance is provided.

Note: If the personal fall arrest system meets the criteria and protocols contained in Appendix C to subpart M, and if the system is being used by an employee having a combined person and tool weight of less than 310 pounds, the system will be considered to be in compliance. If the system is used by an employee having a combined tool and body weight of 310 pounds or more, then the employer must appropriately modify the criteria and protocols of the Appendix to provide proper protection for such heavier weights, or the system will not be deemed to be in compliance.

17. The attachment point of the body harness shall be located in the center of the wearer's back near shoulder level.
18. Personal fall arrest systems and components shall be used only for employee protection and not to hoist materials.
19. Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse.
20. The employer shall provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves.
21. Personal fall arrest systems shall be inspected prior to each use for wear, damage and other deterioration, and defective components shall be removed from service.
22. Personal fall arrest systems shall not be attached to guardrail systems, nor shall they be attached to hoists except as specified in other subparts.

1926.502(d)(8) Horizontal lifelines shall be designed, installed, and used under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.

Positioning Systems

Positioning systems in use are most commonly seen during formwork and tying of rebar. The following are key issues to address when allowed to use a positioning system.

1. Positioning systems must limit free fall to 2 feet.
2. Ensure that employees are trained in the use of positioning systems.
3. Positioning systems must be inspected according to manufacturers directions.
4. Anchor points must be capable of supporting 3,000 pounds.

Positioning systems limits the free fall distance to less than 2 feet.

General Requirements for Positioning Systems

Positioning device systems and their use shall conform to the following provisions:

1. Positioning devices shall be rigged such that an employee cannot free fall more than 2 feet.
2. Positioning devices shall be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or 3,000 pounds, whichever is greater.
3. Connectors shall be drop forged, pressed or formed steel, or made of equivalent materials.
4. Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of this system.
5. Connecting assemblies shall have a minimum tensile strength of 5,000 pounds.
6. D-rings and snaphooks shall be proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or taking permanent deformation.
7. Only locking type snaphooks shall be used.
8. Unless the snaphook is designed for the following connections, snaphooks shall not be engaged:
    a) Directly to webbing, rope or wire rope.
    b) To each other.
    c) To a D-ring to which another snaphook or other connector is attached.
    d) To a horizontal lifeline.
    e) To any object in which its shape or dimension is incompatible in relation to the snaphook such that unintentional disengagement could occur by the connected object being able to depress the snaphook keeper and release itself.
9. Positioning device systems shall be inspected prior to each use for wear,

Snaphooks for positioning systems must be of the locking type and anchorage points must be able to withstand an impact load of 3,000 pounds (picture courtesy DBI/Sala).

While working on rebar assemblies positioning systems must be secured to both a horizontal and vertical piece of rebar (picture courtesy DBI/Sala).

damage, and other deterioration, and defective components shall be removed from service.

10. Positioning systems and components shall be used only for employee protection and not to hoist materials.

Formwork and Reinforcing Steel

Section 1926.501(b)(5) requires that employees on the face of reinforcing steel must be protected from falling 6 feet or more to lower levels by personal fall arrest systems, safety net systems, or positioning devices. After OSHA published this as a final rule, the National Association of Reinforcing Steel Contractors and the International Association of Bridge, Structural and Ornamental Iron Workers asserted that because of the way the rebar is transported to a work location (workers carry the rebar by cradling it in their arms), it was not feasible, or would create a greater hazard, to constantly connect and disconnect fall protection devices while climbing the rebar assemblies.

For this reason, and because rebar assemblies are similar to a fixed ladder, OSHA has allowed workers while constructing rebar assemblies to climb without fall protection up to 24 feet. Once employees reach their work location, or climb above 24 feet, they must use fall protection as specified by the standard.

Fall protection while working off of concrete forms can be achieved with the use of a retractable lanyard. The system can be installed before lifted into place, and then retrieved with the use of a tagline attached to the snaphook (picture courtesy DBI/Sala).

Personal Fall Restraint System

Fall restraint is an option, which is available in a number of situations. Fall restraint is a system, which physically limits an employee's exposure to a fall hazard by stopping them before they fall. For example, when a cable assembly 20 feet long is attached to an anchor 22 feet from a floor opening and attached to a body harness, this will stop the employee 2 feet before they reach the fall exposure. This system may be used in areas where other systems like; guardrails, hole covers, safety nets etc. cannot be installed or are removed to facilitate work. The following are key concerns when using personal fall restraint and possible applications.

1. Some areas that fall restrain has been used include roofing operations, open sided floors, floor and roof openings, catch platforms and work platforms.
2. The rope or cable being used must be rigged in such a manner to physically restrict access to the hazard.
3. The anchorage point of the rope/cable should be capable of supporting 3,000 pounds or a qualified person maintaining a safety factor of two must evaluate the overall system.
4. Employees must be trained in the use and limitations of fall restraint.
5. Employees must not use the restraining system in the vicinity of other hazards.
6. Fall restraint equipment must be inspected according to manufacturers directions.
7. Unprotected workers must be restricted from approaching the fall hazard.

General Requirements for Personal Fall Restraint Systems

1. Fall restraint systems must meet the same requirements of both the positioning and personal fall arrest systems.
2. Full body harnesses are recommended, but body belts are accepted when using this system.
3. The anchorage point must be capable of supporting 3,000 pounds or two times the intended impact load determined by a qualified person.
4. When a personal fall restraint system is used at hoist areas, it shall be rigged to allow the movement of the employee only as far as the edge of the walking/working surface.

Personal fall restraint systems can be used as long as the system physically restricts or stops the employee before they fall.

Selecting Proper Anchorage Points

Key concepts to be discussed within this section include:

1. The required strength requirements for fall arrest anchorage points.

2. The proper location of fall arrest anchorage points.

Anchorages

It's important to remember that fall protection is only as good as its anchorage. It doesn't matter how well trained personnel are, how good the equipment is, or whether or not the employee tied off correctly. If the anchor point fails nothing in the system will work.

Structural Requirements

All anchor points for personal fall arrest and positioning systems must meet minimum structural requirements. There are different requirements depending the approach the company takes in selecting anchor points. The following are the minimum structural requirements for anchorage points.

1. All anchorage's must be capable of supporting, without failure, an impact load of 5,000 pounds, or;

2. The anchorage must be able to support two (2) times the maximum intended impact load; a qualified person must determine this.

3. For positioning systems, all anchor points must be able to support 3,000 pounds without failure.

Engineered Anchor Points

To determine the two times intended impact load for anchorage's an engineer or qualified person determines the impact load of a fallen employee, and ensures the anchor will support twice this load. For example, if the engineer determines that the maximum impact load that the fall will create is 1,400 pounds, and then the anchor point must be capable of supporting 2,800 pounds. This is a safety factor of two (2), which OSHA finds acceptable.

The following information should assist in engineering anchor points.

1. Steel members should be used for anchor points whenever possible.

2. Wood may be sufficient on a temporary basis but only if certified by a professional engineer or tested in the field.

3. A qualified person should specify expanded anchor bolts; these have been used successfully in precast operations as anchor points.

4. A qualified person should specify Through-bolts and plate washers.

5. Some additional systems that can be used as an anchor point include shackles, turnbuckles, imbeds, eyebolts, beam clamps and slings.

Note: To assist the contractor in specifying anchor points the architect could be a valuable resource. Their knowledge of the structure could be invaluable. Other options include the steel, precast or truss manufacturer in meeting the structural requirements. The personal fall arrest equipment manufacturer may also be able to assist in recommending anchorage points. If possible, specify from the steel or structural material manufacturer to install tie-off points that meet the structural requirements of Subpart M.

Temporary vs. Permanent

The minimum structural requirements for permanent and temporary anchorage points are identical. In fact OSHA does not even address a difference between the two. The key issue to remember, whether permanent or temporary, is that the anchorage should not degrade over the expected lifetime. All anchor points must be designed to maintain the minimum strength required over their lifetime.

Therefore, there will be some unique design options incorporated into a permanent anchor point that will not be included in a temporary point. For example, designers of permanent anchoring systems may have a greater concern over aesthetics than designers of temporary systems. Regardless there are no different requirements for the structural integrity of either system.

Location

The proper location of anchor points is critical in the employee's safety in the event of a fall. Take the following scenario for example. An anchor point located on an exterior column at the employee's foot level will expose the person to an 11-foot fall and a swing hazard. How is this possible? The person will fall approximately 5 feet in a harness before they are level with the anchor point. Now he falls another 6 feet before the lanyard stops him, and slams him into the exterior wall!

In order to avoid these hazards the following guidelines should be followed.

1. The anchor point should limit the fall to the shortest possible distance.

2. It should be located as close as possible over the employee's head.

3. It should be located that in the event of a fall, the employee does not swing into any object.

4. The anchor point should not be located or tied to any structure that is supporting personnel.

5. The total fall distance should be considered when locating anchorage points to determine if there is adequate clearance in the event of a fall. (*See section, Selection and Application of Conventional Systems*)

6. A qualified person should identify anchor points.

7. When practical anchorage points should be painted or identified so employees know where to tie-off.

Improper Anchor Points

There are a number of fatalities each year where employees are tied-off to inadequate or improper anchor points. The following are areas that should never be used as anchor points.

- Standard Guardrails
- Standard Railings
- Ladders/Rungs
- Scaffolding
- Light fixtures
- Conduit or Plumbing
- Ductwork or Pipe Vents
- C-Clamps
- Wiring Harnesses
- Rebar (except for positioning during formwork)
- Another lanyard
- Roof Stacks, Vents or Fans
- Any point which does not meet the structural requirements.

Anchorage Considerations

Properly planned anchor points should be used if they are available. In some cases, anchorages must be installed immediately prior to use. In such cases, a registered professional engineer with experience in designing fall protection systems, or another qualified person with appropriate education and experience should design an anchor point to be installed.

In other cases, OSHA recognizes that there will be a need to devise an anchor point from existing structures. Examples of what might be appropriate anchor points are steel beams or I-beams if an acceptable strap is available for connection (do not use a lanyard with a snap hook hooked onto itself); large eyebolts made of an appropriate grade steel; guardrails or railings if they have been designed for use as an anchor point; or masonry or wood members only if the attachment point is substantial and precautions have been taken to assure that bolts or other connections will not pull through. A qualified person should be used to evaluate the suitability of these anchorages with the focus on proper strength.

Selection and Application of Conventional Systems

Key concepts to be discussed within this section include:

1. Guardrail systems.
2. Hole covers.
3. Safety nets.
4. Personal fall arrest equipment.
5. Positioning systems.
6. Fall restraining systems.
7. Fall force limits and a simple calculation method.
8. Calculating the total fall distance with personal fall arrest systems.

Guardrail Systems

The OSHA standard requires that guarding must be provided when an employee is exposed to a fall of 6 feet or more. The following areas lend themselves to the installation of guardrail systems for fall prevention.

1. Along the edge of all open sided floors or edges where a fall exposure exists.
2. On work platforms where a fall exposure exists.
3. On stair systems.
4. Around floor and roof openings.
5. Around holes too large to place covers over.
6. Around the exterior of a roof during roofing work.
7. On articulating/elevating work platforms.

8. Near window openings where the sill is lower than 39 inches.

9. In an area/edge where a possible fall would allow an employee to strike dangerous equipment or material, regardless of the fall distance.

10. On access ways, ramps or catwalks where there is a fall exposure.

11. Parapets less than 39" in height.

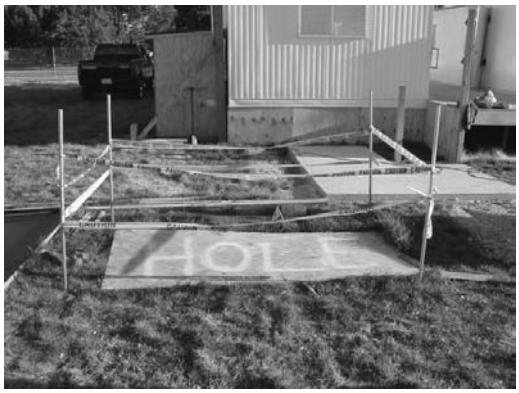
Hole Covers

Hole covers are another method an employer may use to protect against falls. According to the OSHA definition, a hole is any opening measuring 2 inches or more in its least dimension in a floor, roof or walking surface. The following guidelines should assist in the placement of hole covers.

1. Place covers over all holes on the site, for larger holes guardrail systems are an option.

2. Construct the covers to support two (2) times the weight that will cross over them. This includes employees, equipment, tools and all construction vehicles, such as scissor lifts.

3. If plywood is used as a hole cover it must be at least 3/4 inch thick.



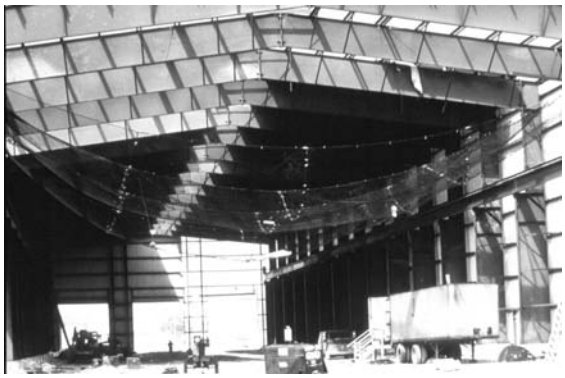
4. All covers must be secured. Cleats, wire, nails or any other method, which will not allow the cover to be displaced, can do this.

5. After the cover is placed, write the word hole or cover on it for identification. This can be easily done with a can of spray paint.

6. If the cover it too small to write “hole” on it, then they must be color coded for identification and employees must be trained to recognize what the color is identifying.

Safety Nets

The installation of a safety net does not keep an employee from falling; rather they catch the employee after the fall. They are though, similar to guardrails and covers in the respect that these three systems are recognized as passive fall protection. In other words, they are always in place to provide fall protection. Safety nets are commonly installed in the following ways.



1. Safety nets are used during steel erection. To provide the best protection, the erector should assemble as much of the structure on the ground. Once assembled, the safety nets are installed before the section is lifted into place and secured.

2. During bridgework. Nets can be installed in the same manner as above, or in the event of reconditioning work the nets should be installed from boom lifts, man baskets or employees utilizing personal fall arrest systems.

3. During demolition or maintenance work. Safety nets can be designed to provide personal fall protection, and to collect falling debris.

4. In any event, the installation of safety nets must be done by individuals protected from the fall hazards they are exposed to during the installation.

5. Safety nets are also acceptable means of fall protection for holes, open sided floors, catch platforms and steel/concrete erection.

6. Make certain the safety net is designed for this purpose and is serviceable.

Personal Fall Arrest Systems

The personal fall arrest systems used in construction should be used as a last resort. The contractor should focus on fall prevention methods first such as guardrails or hole covers. If after all pre-planning for fall prevention still leaves a fall exposure and the contractor is not using a fall protection plan, controlled access zone, or warning line, then personal fall arrest must be implemented. The following are some key concerns when implementing a personal fall arrest option.

Note: Refer to Pre-planning for Fall Prevention before implementing personal fall arrest.

1. Only a full body harness with a retractable or shock-absorbing lanyard may be used.

2. Use only locking snap hooks on the lanyards.

3. Are the anchor points for tying off structurally sound?

4. Are the employee's tied-off when in the area of a fall hazard?

5. Is all personal fall arrest equipment inspected according to the manufacturers directions?

6. Is the system installed/designed to limit the free fall to 6 feet?

Picture courtesy DBI/Sala

7. Are there any additional hazards in the event of a fall?

8. Is there a rescue plan in place in the event of a fall?

9. Are employees trained in the use of the personal fall arrest systems?

10. Does the system in place limit the fall forces to acceptable limits?

Positioning Systems

Positioning systems in use are most commonly seen during formwork and tying of rebar. The following are key issues to address when allowed to use a positioning system.

1. Positioning systems must limit free fall to 2 feet.

2. Ensure that employees are trained in the use of positioning systems.

3. Are the positioning systems inspected according to manufacturers directions?

4. Are anchor points capable of supporting 3,000 pounds?

Picture courtesy DBI/Sala

Restraining Systems

Fall restraint is an option, which is available in a number of situations. Fall restraint is a system, which physically limits an employee's exposure to a fall hazard by stopping them before they fall. For example, when a cable assembly 20 feet long is attached to an anchor 22 feet from a floor opening and attached to a body belt, this will stop the employee 2 feet before they reach the fall exposure. This system may be used in areas where other systems like guardrails; covers nets etc. cannot be installed or are removed to facilitate work. The following are key concerns when using personal fall restraint and possible applications.

1. Some areas that fall restrain has been used include roofing operations, open sided floors, floor and roof openings, catch platforms and work platforms.

2. Is the rope or cable being used rigged in such a manner to physically restrict access to the hazard?

3. Is the anchor of the rope/cable capable of supporting 3000 pounds or two times the intended impact load determined by a qualified person?

4. Are employees trained in the use and limitations of fall restraint?

5. Are employees using the restraining system in the vicinity of the hazard?

6. Is the equipment inspected according to manufacturers directions?

7. Are unprotected workers restricted from approaching the fall hazard?

Fall Force Limits

OSHA has established maximum limits or force that the body can be exposed to in the event of a fall. While wearing a full body harness for fall arrest, the system must limit the arresting forces to **1,800 pounds**.

Fall Force Calculations

Note: These calculations are approximate and are for illustrative purposes only.

A quick and relatively simple way to calculate the forces an employee will be exposed to in the event of a fall is F = (W x D) divided by the stopping distance. This method will work to give you a rough idea of what the fall forces will be with non-shock absorbing lanyards. Shock absorbing lanyards are designed to limit these arresting forces to below the 900-pound limit.

Here is an example:

Employee weight 200 pounds
Free fall distance x 5 feet

Generated force =1000 ft. pounds

Now we need to take the generated force, which in this case is 1000 ft. pounds, and divide this number by the stopping distance. By doing this we will discover the force, which the individual will be exposed to in the event of a fall.

Generated force 1000 ft. pounds
Stopping distance .5 ft.

Fall force exposure = 2000 pounds

*Note: The stopping distance of .5 ft. is an example **ONLY**. The stopping distance is dependent on fall distance. To determine stopping distance the manufacturer of the equipment needs the fall distance and employee weight. Check with your equipment manufacturer for assistance on stopping distances.*

Calculating Total Fall Clearance

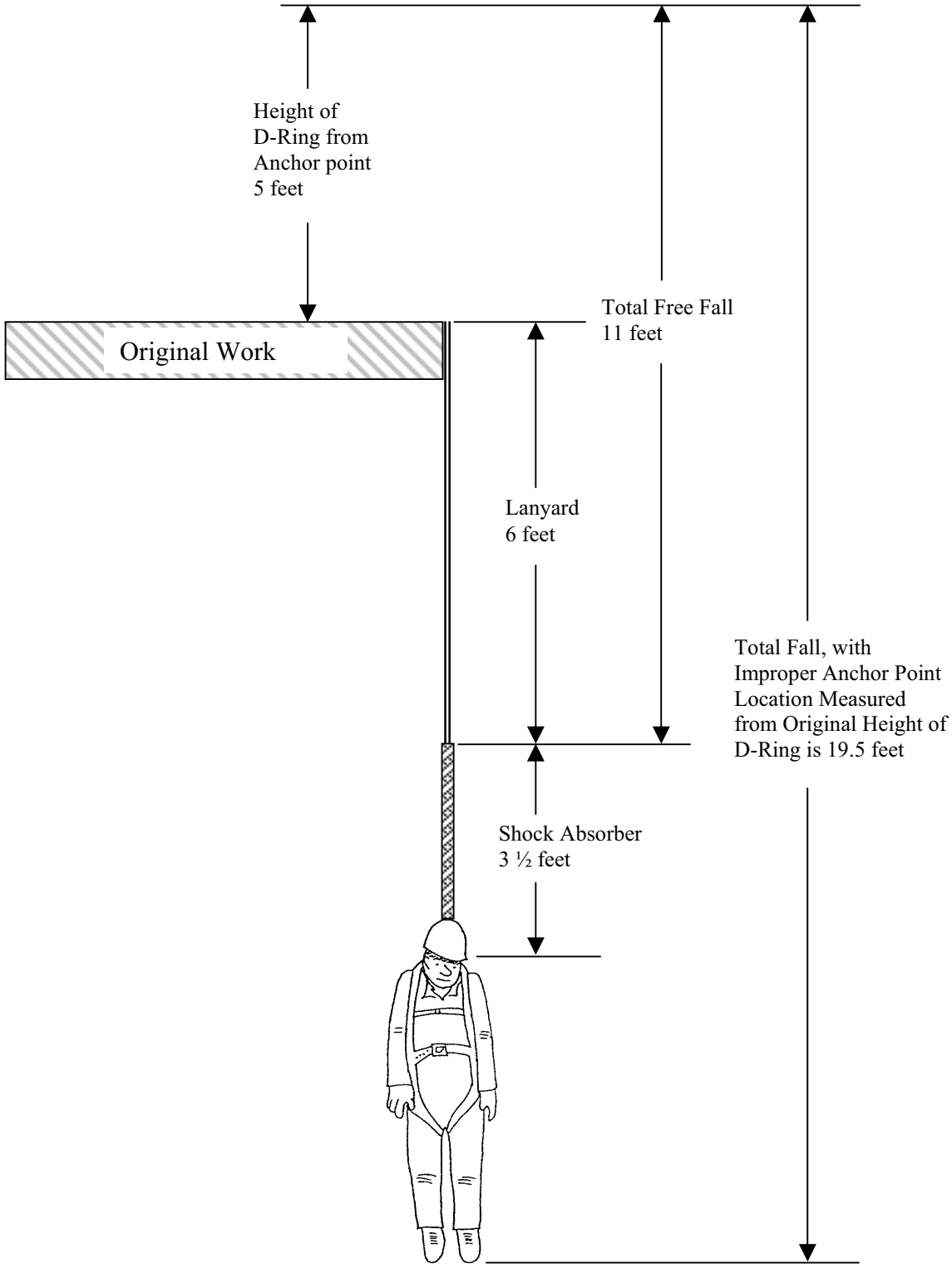
OSHA limits total free fall distance to a maximum of 6 feet as referenced by 1926.501 (b), and less in cases when working over dangerous equipment 1926.501 (b) (8). But limiting these falls to 6 feet is not as simple as purchasing 6-foot lanyards. Please refer to the following example (see diagram 1).

An employee is wearing a full body harness with the D-ring 5 feet off the floor, attached is a 6-foot shock-absorbing lanyard. If the employee attaches the lanyard to an anchor point at ground level, and falls over the open sided floor, he will be exposed to a free fall of approximately 11 feet (D-ring height of 5 feet + lanyard length of 6 feet). In addition, the shock-absorbing lanyard may lengthen up to 3.5 feet thus exposing the employee to a total fall of 14.5 feet. Considering that the D-ring is 5 feet from the employees feet (when wearing the harness) you will need an additional 5 feet of clearance to ensure the employee doesn't hit anything below in the event of a fall. Adding all of this together we have a minimum total fall distance in this situation of 19.5 feet.

D-ring height	5 feet
Shock absorbing lanyard	6 feet
Shock absorber stretch	3.5 feet
Post fall clearance in harness	+ 5 feet
Minimum clearance required	**19.5 feet** (refer to diagram 1)

Position of D-Ring when wearing a full body harness for personal fall arrest is in the middle of the back between the shoulder blades.

Diagram 1


Height of
D-Ring from
Anchor point
5 feet
Original Work
Total Free Fall
11 feet
Lanyard
6 feet
Total Fall, with
Improper Anchor Point
Location Measured
from Original Height of
D-Ring is 19.5 feet
Shock Absorber
3 ½ feet

To minimize the clearances required follow these general guidelines:

1. When ever possible, secure the lanyard to an anchor point at or above the height of the D-ring.
2. When this is not possible, use a shorter lanyard or retractable lanyard but never allow for a free fall of more than 6 feet.
3. Remember to calculate the shock absorbers stretch into the total to determine clearance required.
4. Remember to add the height from the employee's feet to the D-ring as well.

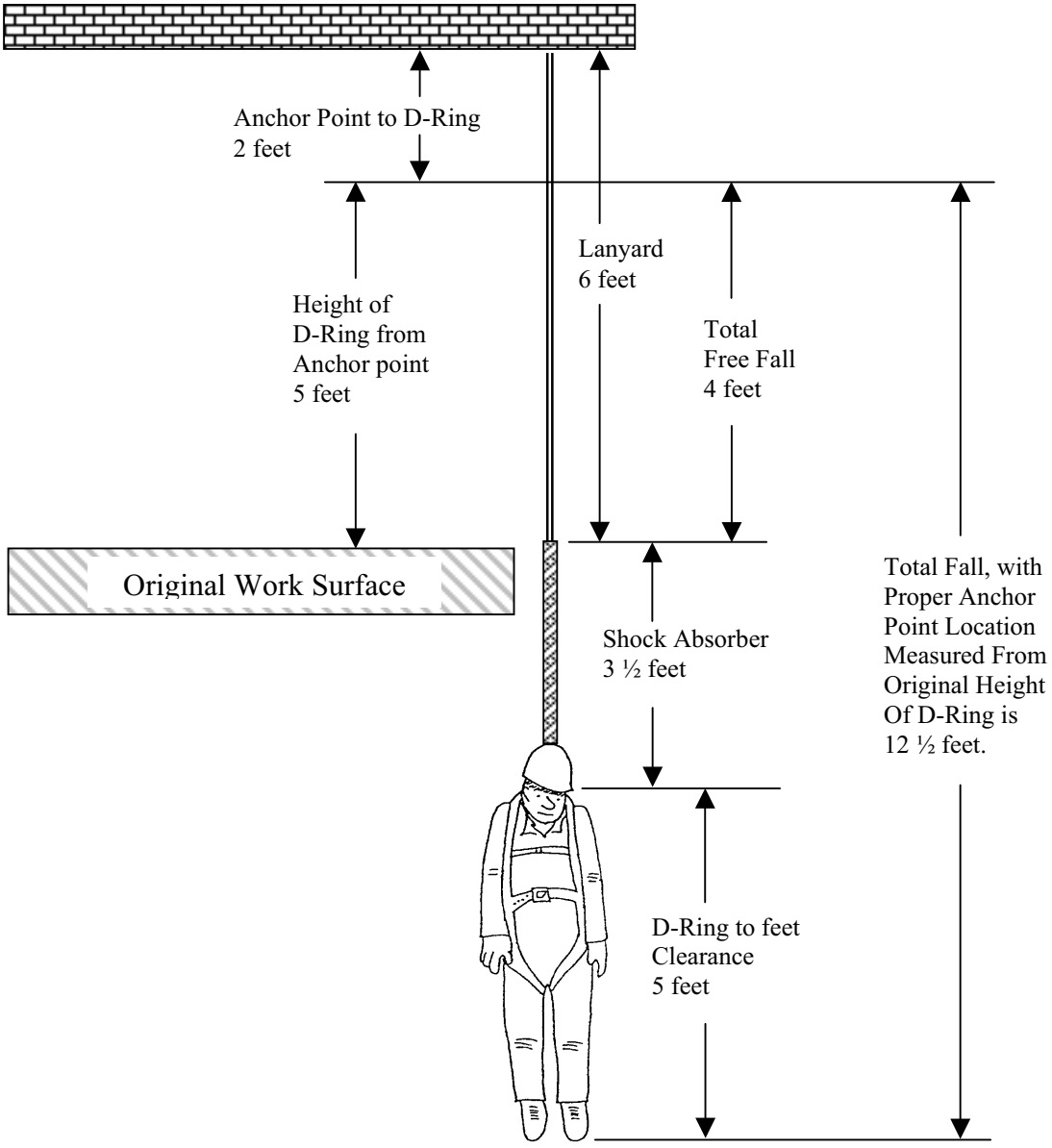
The following is another example of calculating total fall clearance required, with the same employee above with the proper anchor point. In this case, the anchor point is located 2 feet above the D-ring on the harness; notice the different results (see diagram 2).

With the lanyard tied to the anchor point 2 feet above the D-ring the free fall has been limited to 4 feet. The shock absorber maximum stretch remains 3.5 feet, and the d-ring height remains 5 feet. Thus the minimum clearance required in this case would be approximately 12.5 feet.

Free fall distance	4 feet
Shock absorber stretch	3.5 feet
D-ring height	+ 5 feet
Minimum clearance required	**12.5 feet** (refer to diagram 2)

Note: These minimum clearances are in the event of a fall, no part of the employee's body/legs hit anything below. OSHA allows for a free fall of 6 feet, but they also require if an employee falls they do not strike anything below.

Diagram 2


Anchor Point to D-Ring
2 feet
Lanyard
6 feet
Height of
D-Ring from
Anchor point
5 feet
Total
Free Fall
4 feet
Original Work Surface
Shock Absorber
3 ½ feet
Total Fall, with
Proper Anchor
Point Location
Measured From
Original Height
Of D-Ring is
12 ½ feet.
D-Ring to feet
Clearance
5 feet

Specialized Fall Protection Systems

Key systems to be discussed within this section include:

1. Safety Monitor.
2. Warning Line.
3. Safety Monitor/Warning Line.
4. Controlled Access Zone.
5. Fall Protection Plan.

Safety Monitor

The safety monitor system is designed for work on low-sloped roofs, 4/12 pitch or less, and roofs less than 50 feet in width. As stated in 1926.501 (b) (10) any employees performing roofing operations with unprotected sides or edges 6 feet or more above the next level must be provided with fall protection, a safety monitor is one option. Also acceptable are personal fall arrest systems, safety nets and guardrail systems.

If the roof is greater than 50 feet in width, a safety monitor system alone is not acceptable. In this situation a warning line system with a guardrail system, warning line and personal fall arrest, warning line with safety nets or warning line and safety monitor must be used. Also, if the roof is greater than 4/12 pitch, workers involved in roofing operations must be protected from falling by a guardrail system with toeboards, safety nets or personal fall arrest system (1926.501 (b) (11)).

The safety monitoring system and its use shall comply with the following guidelines:

(1) The employer shall designate a competent person to monitor the safety of other employees and the employer shall ensure that the safety monitor complies with the following requirements:

a. The safety monitor shall be competent to recognize fall hazards;
b. The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner;
c. The safety monitor shall be on the same walking/working surface and within visual sighting distance of the employee being monitored;
d. The safety monitor shall be close enough to communicate orally with the

employee; and

e. The safety monitor shall not have other responsibilities that could take the monitor's attention from the monitoring function.

(2) Mechanical equipment shall not be used or stored in areas where safety monitoring systems are being used to monitor employees engaged in roofing operations on low-slope roofs.

(3) No employee, other than an employee engaged in roofing work [on low-sloped roofs] shall be allowed in an area where an employee is being protected by a safety monitoring system.

Warning Line

Warning line systems and their use shall comply with the following provisions:

(1) The warning line shall be erected around all sides of the roof work area.

a. When mechanical equipment is not being used, the warning line shall be erected not less than 6 feet from the roof edge.
b. When mechanical equipment is being used, the warning line shall be erected not less than 6 feet from the roof edge which is parallel to the direction of mechanical equipment operation, and not less than 10 feet from the roof edge which is perpendicular to the direction of mechanical equipment operation.
c. Points of access, materials handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines.
d. When the path to a point of access is not in use, a rope, wire, chain, or other barricade, equivalent in strength and height to the warning line, shall be placed across the path at the point where the path intersects the warning line erected around the work area, or the path shall be offset such that a person cannot walk directly into the work area.

(2) Warning lines shall consist of ropes, wires, or chains, and supporting stanchions erected as follows:

a. The rope, wire, or chain shall be flagged at not more than 6-foot intervals with high-visibility material;
b. The rope, wire, or chain shall be rigged and supported in such a way that its lowest point (including sag) is no less than 34 inches from the walking/working surface and its highest point is no more than 39 inches from the walking/working surface;
c. After being erected, with the rope, wire, or chain attached, stanchions shall be capable of resisting, without tipping over, a force of at least 16 pounds applied horizontally against the stanchion, 30 inches above the walking/working surface, perpendicular to the warning line, and in the direction of the floor, roof,

or platform edge;

d. The rope, wire, or chain shall have a minimum tensile strength of 500 pounds, and after being attached to the stanchions, shall be capable of supporting, without breaking, the loads applied to the stanchions as prescribed in paragraph c of this section; and
e. The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.

(3) No employee shall be allowed in the area between a roof edge and a warning line unless the employee is performing roofing work in that area.

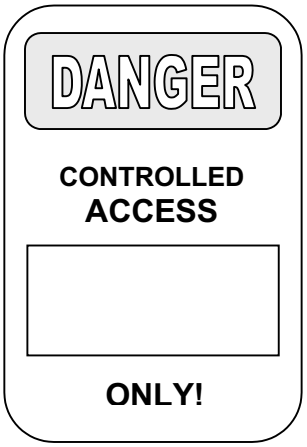
(4) Mechanical equipment on roofs shall be used or stored only in areas where employees are protected by a warning line system, guardrail system, or personal fall arrest system.

Warning Line/Safety Monitor System

On roofs with a pitch of 4/12 or less and greater than 50 feet in width, a combination of warning line and safety monitor may be used. Remember to comply with the requirements of each system. When an employee is working outside the warning line, they must be monitored by a competent person (safety monitor) who is within visual and verbal range of employees.

Other options for employees working outside the warning line include personal fall arrest, safety nets or guardrail systems. If there is no guardrail system or personal fall arrest equipment in use, than no mechanical equipment is to be used outside the warning line.

Controlled Access Zone



Controlled access zones are only allowed during leading edge work, overhand brick laying, precast concrete erection and residential construction. In a controlled access zone, a line must identify the area where the specific work is being done and must physically restrict this area to trained employees completing the work.

If a contractor is authorized, and chooses this system, then they should follow these steps to establish an acceptable controlled access zone.

1. Identify the type of controlled access zone required (leading edge, precast concrete, residential and overhand brick laying).
2. Identify the controlled access zone line distance from the work area.
3. Place the appropriate line in the proper location.
4. Place controlled access zone signs in the area.
5. Restrict access to trained employees performing the specific task.

Controlled access zones and their use shall conform to the following provisions:

(1) When used to control access to areas where **leading edge** and other operations are taking place the controlled access zone shall be defined by a control line or by any other means that restricts access.

a. When control lines are used, they shall be erected not less than 6 feet nor more than 25 feet from the unprotected or leading edge, except when erecting precast concrete members.
b. When erecting precast concrete members, the control line shall be erected not less that 6 feet nor more than 60 feet or half the length of the member being erected, whichever is less, from the leading edge.
c. The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge.
d. The control line shall be connected on each side to a guardrail system or wall.

(2) When used to control access to areas where overhand bricklaying and related work are taking place:

a. The controlled access zone shall be defined by a control line erected not less than 10 feet nor more than 15 feet from the working edge.
b. The control line shall extend for a distance sufficient for the controlled access zone to enclose all employees performing overhand bricklaying and related work at the working edge and shall be approximately parallel to the working edge.
c. Additional control lines shall be erected at each end to enclose the controlled access zone.
d. Only employees engaged in overhand bricklaying or related work shall be permitted in the controlled access zone.

(3) Control lines shall consist or ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:

a. Each line shall be flagged or otherwise clearly marked at not more than 6-foot intervals with high-visibility material.
b. Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches from the walking/working surface and its highest point is not more than 45 inches [50 inches (1.3 m) when overhand bricklaying operations are being performed] from the walking/working surface.
c. Each line shall have a minimum breaking strength of 200 pounds.

(4) On floors and roofs where guardrail systems are not in place prior to the beginning of overhand bricklaying operations, controlled access zones shall be enlarged, as necessary, to enclose all points of access, material handling areas, and storage areas.

(5) On floors and roofs where guardrail systems are in place, but need to be removed to allow overhand bricklaying work or leading edge work to take place, only that portion of the guardrail necessary to accomplish that day's work shall be removed.

Fall Protection Plans

A fall protection plan is a last resort for fall protection and is allowed for residential, precast concrete erection and leading edge work ***only***. If a contractor chooses to use a fall protection plan, even if the plan is acceptable, **and cannot prove that conventional fall protection options are infeasible or create a greater hazard,** they will be in violation of the standard.

OSHA's definition of infeasible means that it is impossible to perform the construction work using conventional fall protection systems or that it is technologically impossible to use any one of these systems to provide fall protection.

If the fall protection plan is to be implemented, it must follow these guidelines:

(1) The fall protection plan shall be prepared by a qualified person and developed specifically for the site where the leading edge work, precast concrete work, or residential construction is being performed and the plan must be maintained up to date.

(2) Any changes to the fall protection plan shall be approved by a qualified person.

(3) A copy of the fall protection plan with all approved changes shall be maintained at the job site.

(4) The implementation of the fall protection plan shall be under the supervision of a competent person.

(5) The fall protection plan shall document the reasons why the use of conventional fall protection systems (guardrail systems, personal fall arrest systems, or safety nets systems) are infeasible or why their use would create a greater hazard.

(6) The fall protection plan shall include a written discussion of other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection from the conventional fall protection systems. For example, the employer shall discuss the extent to which scaffolds, ladders, or vehicle mounted work platforms can be used to provide a safer working surface and thereby reduce the hazard of falling.

(7) The fall protection plan shall identify each location where conventional fall protection methods cannot be used. These locations shall then be classified as controlled access zones and the employer must comply with the criteria for controlled access zones

(8) Where no other alternative measure has been implemented, the employer shall implement a safety monitoring system in conformance with §1926.502(h).

(9) The fall protection plan must include a statement that provides the name or other method of identification for each employee who is designated to work in controlled access zones. No other employees may enter controlled access zones.In the event an employee falls, or some other related, serious incident occurs, (e.g., a near miss) the employer shall investigate the circumstances of the fall or other incident to determine if the fall protection plan needs to be changed (e.g. new practices, procedures, or training) and shall implement those changes to prevent similar types of falls or incident.

(10) In the event an employee falls, or some other related, serious incident occurs, (e.g., a near miss) the employer shall investigate the circumstances of the fall or other incident to determine if the fall protection plan needs to be changed (e.g. new practices, procedures, or training) and shall implement those changes to prevent similar types of falls or incident.

Applying Specialized Systems

Key systems to be discussed within this section include:

1. Safety Monitor System.
2. Warning Line System.
3. Safety Monitor/Warning Line System.
4. Controlled Access Zones.
5. Fall Protection Plans
6. Conventional Systems "Infeasibility" Checklist.

Safety Monitor

The safety monitoring systems are primarily used in fall protection plans, controlled access zones, and during roofing operations. Contractors have the option to develop alternate work methods or protection such as guardrails to eliminate exposures instead of using the safety monitor. An employer may connect precast concrete members from articulating boom lifts and have the connector's tied-off to the lift as an alternate measure. With specific safety training and addressing this method within the fall protection program, a safety monitor is not required.

This system assists employers in providing fall protection for situations where conventional options are not feasible. A competent person becomes responsible for identifying hazards and immediately notifying employees in order to prevent a fall from the working surface. There are several key issues to remember when applying a safety monitoring system:

1. The safety monitor must be immediately recognizable by means of a warning vest, unique hardhat, armband or other device, which visually identifies them as the safety monitor.

2. Employees must be trained to follow the monitor's directions immediately.

3. The monitor must be in visual and verbal range of all monitored personnel.

4. It is a violation to list everyone on the job as a safety monitor, with the responsibility to monitor each other.

According to OSHA, the safety monitors can have no other responsibilities that interfere with their monitoring function. This becomes critical considering they may have additional duties. Two of the questions employers using a safety monitor must answer are:

1. Will the assigned additional duties hinder the safety monitors primary function of monitoring employees?

2. When the safety monitor takes on these additional duties, at what point will these responsibilities adversely effect the notification of monitored employees?

Warning Line System

The warning line system was developed specifically for a means of fall protection, or fall hazard warning, for the roofing industry. When applying the warning line system to roofing operations remember the following issues:

1. Warning lines must be established on roofs before employees are allowed to work on the roof.

2. Make sure that the roof is a 4/12 pitch or less, if it is steeper than this a warning line system is not allowed. In these situations only guardrails, safety nets or personal fall arrest systems are acceptable.

3. If the roof is less than 50 feet in width and a 4/12 pitch or less the use of a safety monitor alone is acceptable. See Appendix A in Subpart M for measuring guidelines.

4. On roofs over 50 feet in width the warning line must meet the requirements of Subpart M.

5. Remember, the warning line system cannot be used alone; it must be supplemented by another fall protection system. This second system is specifically for those employees working outside the warning line, and can be any one of the following:

    a. A safety monitor
    b. Personal fall arrest systems
    c. Safety nets
    d. Guardrails

Note: If, for example, a fixed guardrail system is placed around the entire roof for fall protection then the use of a warning line, safety monitor, nets or personal fall arrest systems are not required.

Safety Monitor/Warning Line

Considering this method is the most commonly used system on roofs over 50 feet in width there are a few issues contractors need to be aware of in implementing this option.

1. Remember that any employee working outside the warning line must be in visual and verbal range of the safety monitor. If, for example, the roof is 75 feet wide and employees will be working on all sides, there will be a need for more than one monitor.

2. If the monitor is responsible for monitoring employees that will be behind them at any point, this is a violation of the standard.

3. Verify that all employees on the roof have been trained in the hazards and systems used for protection, and are trained to listen to the safety monitor(s).

4. When mechanical equipment is used in the operation, make sure that all equipment is within the warning line at all times.

5. If unique situations develop where mechanical equipment must be used outside the warning line, then additional methods such as personal fall arrest systems must be employed to provide fall protection.

Controlled Access Zone

Controlled access zones are allowed for leading edge work, overhand brick laying, precast concrete erection and residential construction only. In this zone, a line must identify where the work is being done and must restrict the area to trained employees completing the operation. If a contractor chooses this system, these guidelines should assist in establishing an acceptable zone.

1. Identify the type of controlled access zone required (leading edge, overhand bricklaying, residential construction or precast concrete erection).

2. Next, verify what the line distance will be from the work area/activity.

3. Place the appropriate line (see 1926.502 (g)(3)) in the proper location.

4. Make sure this line completely encloses the work project on all sides, which could be used as an access point.

5. Place controlled access zone signs in the area.

6. Restrict access to trained employees completing the specific operation which the controlled access zone was established for.

Fall Protection Plans

Fall protection plans are a last resort for employee protection. Currently these plans are allowed only for residential construction, precast concrete erection and leading edge work. Contractors using fall protection plans may need to demonstrate that conventional systems are impossible to use or create a greater hazard. In other words, the contractor must prove that conventional systems are infeasible.

Note: Infeasible means that it is impossible to perform the work using conventional systems or that it is technologically impossible to use any one of these to provide fall protection.

For example, if a contractor uses a fall protection plan and conventional fall protection systems are feasible and appropriate, then the contractor is violating the standard.

Merely copying the fall protection plans within the standard may not be acceptable. The plan for residential construction within the standard was developed specifically for single-family homes. When a contractor develops multi-level condominium projects and employs this plan, they must address the unique fall hazards on site. With these additional fall hazards excluded, the fall protection plan becomes inadequate.

The fall protection plans within the standard are a good place to begin, but remember to address all fall hazards on the job. Contractors using fall protection plans must also remember that the plans must meet the requirements specified in 1926.502 (k).

Conventional Systems "Infeasibility" Checklist

The purpose of this checklist is to assist the employer in verification that conventional fall protection systems are not feasible or create a greater hazard with their implementation.

Definition of Infeasible:

Infeasible means that it is impossible to perform the construction work using a conventional fall protection system (i.e., guardrails, safety nets, or personal fall arrest) or that it is technologically impossible to use any one of these systems to provide fall protection.

It is the employer's responsibility to prove infeasibility. If OSHA identifies a method where fall protection is feasible, the infeasibility argument is invalid for purposes of the standard; the burden of proof lies with the employer.

1. Are guardrails feasible/appropriate?
   If not, why?

2. Are safety nets feasible/appropriate?
   If not, why?

3. Are hole covers feasible/appropriate?
   If not, why?

4. Are positioning systems feasible/appropriate?
   If not, why?

5. Is personal fall arrest feasible/appropriate, including;

   a. Full body harnesses/body belt
   b. Shock absorbing lanyards
   c. Retractable lanyards
   d. Appropriate anchor points

6. Is personal fall restraint feasible/ infeasible/appropriate?
   If not, why?

7. Are horizontal/vertical lifelines feasible/appropriate?
   If not, why?

8. Is a rope grab system feasible/appropriate?
   If not, why?

9. Are there other work methods, which are feasible/appropriate, including:

    a. Can the work be done from a ladder?
    b. Can the work be done from scaffolding?
    c. Can the work be done from scissor/articulating boom lifts?
    d. Can the work be done from a manbasket?
    e. Can the work be assembled on the ground and lifted into place as a completed unit, minimizing exposure to a fall?
    f. Can fall protection be installed before worker exposure (i.e., placing horizontal life lines or safety nets on the steel before it is lifted into place and connected)?

    If none of the above is feasible, list the reasons why.

10. Can suspended platforms with fall protection (i.e., guardrails, life lines, restraining systems, etc.) be installed before the work begins?
    If not, why?

11. List the methods you plan to use to provide for fall protection, and then return to the appropriate section within this reference manual to verify compliance.

Inspection Requirements

Key issues to be discussed within this section include:

1. Inspection requirements for conventional fall protection systems.
    a. Guardrails
    b. Hole covers
    c. Safety nets
    d. Personal arrest, positioning and restraint
2. Inspection requirements for anchorage points.
3. Inspection requirements for all walking/working surfaces.
4. Inspection requirements for scaffold systems.
5. Inspection requirements for ladders.
6. Inspection requirements for aerial lift platforms.

Guardrails

Guardrails should be inspected on a regular basis to ensure their structural integrity; a good interval would be weekly inspections by a competent person. If the contractor is using manila or synthetic rope for guardrails, then inspections should be more frequent because of the possibility of deterioration or damage.

Hole Covers

Hole covers are similar to the guardrail system in that they should be inspected regularly to ensure structural integrity. Again, a good interval would be weekly or as necessary due to high traffic.

Safety Nets

Safety nets must be inspected once a week for wear, damage and other deterioration. All defective components will be replaced immediately. Safety nets will also be inspected after any occurrence, which may affect the structural integrity of the net. For example: after impact tests; an employee falls into the net; after material falls into the net; or any object which strikes the net that could have caused damage.

Inspection of Personal Fall Arrest Equipment

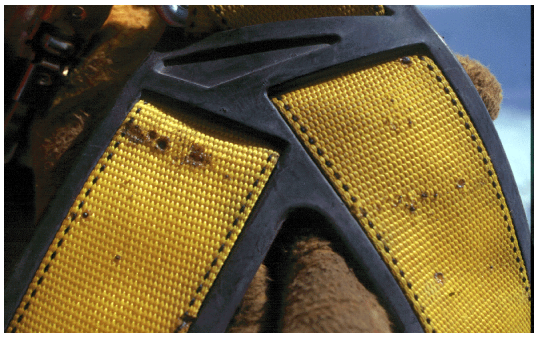
Note: Always follow the manufacturer's directions/recommendations for the inspection requirements of the equipment currently in use. Train all employees to inspect personal fall arrest equipment before each use.

Inspection considerations see Appendix C of 29 CFR 1926, Subpart M.

Body Belt*/Harness Inspection

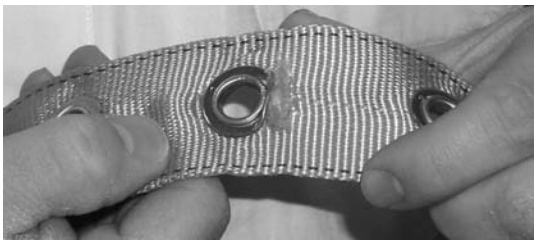
1. Closely examine all of the nylon webbing to ensure there are no burn marks, which could weaken the material.
2. Make certain there is no torn, frayed, broken fibers, pulled stitches or frayed edges anywhere on the belt/harness.
3. Examine the D-ring for excessive wear, pits, deterioration or cracks.
4. Verify that buckles are not deformed, cracked and operate correctly.
5. Check to see that all grommets (if present) are secure and not deformed from abuse or a fall.
6. Belt/harness should never have additional punched holes.
7. All rivets should be tight and not deformed.
8. Check tongue/straps for excessive wear from repeated buckling.

* Body belts are used for positioning and restraint systems only.



Closely examine all of the nylon webbing to ensure there are no burn marks.

Examine the D-ring for excessive wear, pits, deterioration or cracks.



Check to see that all grommets are secure and not deformed from abuse or a fall.

Lanyard Inspection

1. Check lanyard material for cuts, burns, abrasions, kinks, knots, broken stitches and excessive wear.

2. Inspect the snap hooks for hook, locks and eye distortion.

3. Check carabineer for excessive wear, distortion and lock operation.

4. Ensure that all locking mechanisms seat and lock securely.

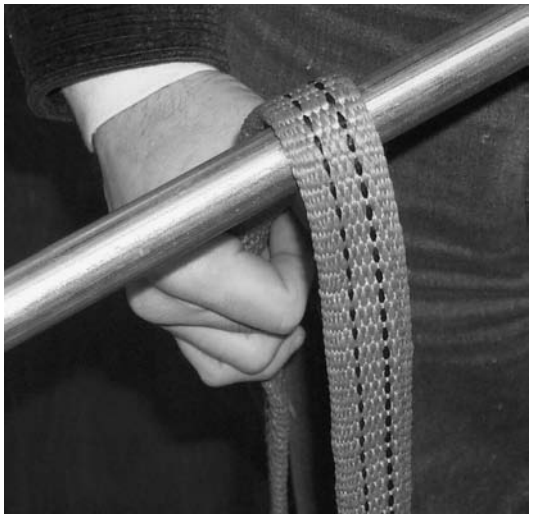
5. Once locked, locking mechanism should prevent hook from opening.

6. Verify that there is no visible "WARNING TAG" which notifies the user that the lanyard has been exposed to a fall.

7. Visually inspect shock absorber for any signs of damage, paying close attention to where the shock absorber attaches to the lanyard.

8. Verify that points where the lanyard attaches to the snap hooks are free of defects.

Check lanyard material for cuts, burns, abrasions, kinks, knots, broken stitches and excessive wear.



Bending over a round pipe allows easy inspection of a nylon-web lanyard.

Open and close snaphook to check for distortion and to ensure that locking mechanism seats and locks securely.

Retractable Lanyard Inspection

1. Visually inspect the body to ensure there is no physical damage to the body.
2. Make sure all back nuts or rivets are tight.
3. Make sure all cable ends are securely crimped and cable eye and rubber stops are in place.
4. Make sure the entire length of the cable/nylon strap are undamaged and retract freely.
5. Test the unit by pulling sharply on the cable to verify that the locking mechanism is operating correctly.
6. If manufacturer requires, make certain the retractable lanyard is returned to the manufacturer for scheduled inspections.

Snap hooks

1. Inspect snap hook for any hook and eye distortions.
2. Verify there are no cracks, pitted surfaces or corrosion.
3. The keeper latch should not be bent, distorted or obstructed.
4. Verify that the keeper latch seats into the nose of hook without binding.
5. Verify that the keeper spring securely closes the keeper latch.
6. Test the locking mechanism to verify that the keeper latch locks properly.

Anchorage Points

There are no specific inspection intervals required for anchor points. The first consideration would be the verification that all anchor points meet the minimum structural integrity requirements. Once this has been verified a weekly inspection is recommended for the following.

1. Look for excessive wear or deformity, which could weaken the anchor point.
2. Look for cracks or sharp edges.

3. Is the anchor point identified as an approved personal fall arrest anchor point?

4. Is there evidence of misuse with the anchor point such as the anchor point used for rigging or lifting heavy loads?

Walking and Working Surface

OSHA defines walking and working surfaces as any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel. This definition does not include ladders, vehicles or trailers on which employees must be located in order for employees to perform their job duties.

Employers are to determine if the walking and working surface on which their people are to work have the strength and structural integrity to safely support the employees. Employers will only allow work to begin once the surface has been determined safe.

The provisions of Subpart M-Fall Protection do not apply when the employer is making an inspection, investigation or assessment of these conditions prior to the start of work, or after all work has finished.

Scaffolds

Considering that scaffold systems are involved in many construction workers falls each year, inspections of these systems are very important. Employees should be trained to inspect all equipment prior to erection and before use each day and/or shift. Any damaged or defective equipment should be tagged and removed from the jobsite immediately. Those areas an inspection should focus on include:

1. Was the scaffold system erected under the supervision of a competent person?
2. Are the mudsills, when required, adequate in size and maintained in safe condition?
3. Are base plates secure and in firm contact with the mudsills?
4. Is the scaffold system plumb, level, rigid and square?
5. Are any ties, bracing, guys or outriggers used still in safe working order?
6. Are all working platforms fully planked with scaffold grade planking?
7. Are guardrails or other fall protection systems employed where a fall exposure exists?
8. Are toe boards installed and in good condition?
9. Are all nuts, bolts, clips and locks secured?
10. Are all end frames and structural members in good condition?
11. Is there a safe access provided by a ladder, stairs or ramp system?
12. Is the working surface free of slip hazards such as oil, ice or excessive material?
13. Verify that the scaffold system is not overloaded.
14. Have employees been trained to work safely on scaffold systems?
15. Is there a method to safely lift materials to the working surface?

Ladders

Ladders should be inspected prior to each use. The employee preparing to use the ladder must be trained to inspect the ladder for the following:

1. Are side rails in good condition without bends, splits or cracks?
2. Are all rungs or steps secure and not damaged?
3. Is all hardware free of damage and operating as designed?
4. Are ladder feet present and in good condition?
5. Are all locks and spreaders operating correctly?
6. Are any ladder components missing like rivets, locks, spreaders or extension ropes?
7. Verify that wooden ladders are not painted; this may hide defects.

Damaged ladders must be removed from service and tagged or destroyed. No one shall be allowed to use a defective ladder.

Aerial Lift Platforms

In addition to training and hazard awareness, the safe operation of aerial lift platforms is unlikely unless an inspection is performed daily or as required by the manufacturer. The following two checklists should be a start to an overall inspection program. The first place any contractor should look for specific inspection requirements would be the equipment's manufacturer.

Operators

1. Is the operator qualified on equipment?

2. Have operators read the manuals?

3. Are pre-operational checklists followed?

4. Has the jobsite been inspected for:

    - Poorly lighted areas
    - Drop-offs, curbs, holes or bumps
    - Inadequate floor support
    - Overhead hazards like ductwork and electrical lines

5. Are any problems or malfunctions reported immediately?

6. Are unserviceable vehicles repaired before being operated?

7. Are vehicles operated with guardrails in place?

General Inspection

1. Are all decals and markings readable?

2. Look for cracked welds.

3. Check for loose or frayed cables.

4. Are operating and inspection manuals on the lift?

Scissors Lift Checklist

1. Check electrical powered units for:

    - Battery water level
    - Battery charger operation

- Battery and connections condition

2. Check gasoline-powered units for:

    - Engine oil level
    - Air filter condition
    - Fuel filter condition
    - Fuel level
    - Fuel line condition

3. Check electrical system - operate both box controls for:

    - Forward
    - Reverse
    - Left
    - Right
    - Up
    - Down

4. Inspect all electrical connections for:

    - Visual deterioration
    - Signs if dryness, stiffness or cracks
    - Verify that all connections are secure

5. Check hydraulic systems for:

    - Fluid level
    - In line pressure valve filter
    - Hydraulic line conditions
    - Hydraulic pump condition
    - Hydraulic cylinder conditions

6. Check tires and wheels for:

    - Cuts
    - Correct air pressure
    - Torque
    - Lugs

7. Verify that all structural components are secure.

8. Are lifting brakes operating properly?

Boom Lift Checklist

In addition to the above checklist, boom lifts should also be inspected for the following:

1. Visual inspections for the following:

    - Check for loose or damaged structural components
    - Inspect hydraulic lines
    - Inspect tires
    - Inspect for structural damage
    - Verify proper tire pressure
    - Check engine oil level and engine systems
    - Fill fuel tank
    - Check battery/electrical systems

2. Start the engine, warm up, position selector switch to the ground control and check the following:

    - Boom up
    - Boom down
    - Rotate right
    - Rotate left
    - Extend out
    - Retracting
    - Forward
    - Reverse

Written Fall Protection Program

Key issues to be discussed within this section include:

1. Purpose of the written program.
2. What the program should address.
3. Sample fall protection program "Table of Contents."
4. Writing the Fall Protection Program.

Fall Protection Program

Employers must provide fall protection for everyone on the job and make sure all walking and working surfaces will safely support the employees. The first step in providing fall protection and complying with the standard is the development and communication of a fall protection program.

The areas that the program should address include, but are not limited to:

1. Management's commitment, leadership and employee involvement;
2. Work site analysis;
3. Hazard prevention and control;
4. Safety and health training;
5. Accident/incident investigation;
6. Enforcement.

The purpose of the program is to identify, manage and control the fall hazards by eliminating them with fall prevention methods. When this is not possible, contractors must install or provide fall protection systems to guard against falls from elevation. This written program needs to address how the employer will manage and control the existing fall hazards. Possible hazards include holes, leading edges, open-sided floors and elevated platforms. The written program can be very detailed or rather simple and direct, depending on the contractors' needs. Here is a sample table of contents for a detailed written program:

I. **Introduction**
- A. Purpose
- B. Scope

II. **Safety Goals and Objectives**
- A. Management
- B. Supervision
- C. Employees

III. **Responsibilities**
- A. President/CEO
- B. Safety personnel
- C. Field managers
- D. Construction workforce

IV. **Accountability and Enforcement**
- A. Accountability measures
- B. Enforcement policy

V. **Hazard Identification and Elimination**
- A. Job site inspections
- B. Analyzing the work area
- C. Job Hazard analysis
- D. Pre-planning for fall prevention/protection

VI. **Fall Prevention**
- A. Engineering controls
- B. Alternate work methods

VII. **Conventional Fall Protection**
- A. Guardrails
- B. Safety nets
- C. Hole Covers
- D. Personal fall protection systems

VIII. **Specialized Fall Protection**
- A. Controlled access zone
- B. Warning line system
- C. Safety monitor system
- D. Fall protection plans

IX. **Application of Fall Protection Systems**
- A. Conventional systems
- B. Specialized systems

X. **Inspection, Storage and Maintenance of Fall Protection Systems**
- A. Conventional systems
- B. Specialized systems

XI. **Training**
- A. Competent person trainer requirements/responsibilities
- B. Documentation requirements
- C. Employee selection

XII. **Rescue Procedures**
- A. Rescue methods/options of fallen personnel
- B. Communication issues
- C. Coordination of off-site EMS

XIII. **Accident/Incident Investigation**
- A. Conducting the investigation
- B. Documentation
- C. Interviews
- D. Reporting requirements

XIV. **Program Evaluation**
- A. Accident/incident reports
- B. Medical reports
- C. Incident rates
- D. Management/employee compliance
- E. Industry comparison

Writing the Fall Protection Program

The following is an outline contractors can follow to develop a written program:

I. INTRODUCTION

Purpose - The purpose statement explains exactly what the contractor is striving to achieve in regards to the program, in other words their goal.

EXAMPLE:

To prevent work related injuries resulting from falls from elevations. The prevention of these incidents will be accomplished by the use of fall prevention and fall protection methods, the training of affected employees and proper enforcement by all field management staff.

Scope - The scope is simply the area that will be covered by this written program.

EXAMPLE:

This policy applies to all company employees working on any construction site and who may be exposed to fall hazards in the course of their daily activities. This program also applies to non-site personnel, visitors and any individual on site exposed to a fall hazard.

II. SAFETY GOALS AND OBJECTIVES

Management - Explain in this section specifically what management goals may be.

EXAMPLE:

The goal of management is to drastically reduce, and eventually eliminate, the occurrences of falls from elevation in the construction of our projects. Through effective administration, cost controls, enforcement and evaluation of related incidents, management will continually modify the fall protection measures until these injuries are eliminated.

Supervision - Explain in this section what the goals of supervisory personnel will be.

EXAMPLE:

The goal of the supervisory personnel will be complete compliance with a company's fall protection program, enforcement of these requirements, hazard identification, hazard mitigation and providing adequate training for all field personnel. By striving for effective training, compliance and hazard mitigation these injuries will be controlled.

Employees - Explain in this section what the goals of the employees will be.

EXAMPLE:

1. Employees will be able to identify the fall hazards on the job site.
2. Employees will have the training to work safely in hazardous areas.
3. Employees will be able to understand the hazards associated with working near fall hazards.
4. Employees will understand what the companies policies are relating tofall protection.

III. RESPONSIBILITIES

President/CEO - What will the presidents responsibilities be in regards to the program.

EXAMPLE:

The president of this company takes ultimate responsibility to ensure all management, safety and field personnel are adhering to the written requirements within this program. In the event compliance is not achieved the president will take immediate action to rectify this situation.

Safety Personnel - What will the safety personnel's responsibilities be in regards to this program.

EXAMPLE:

The safety personnel will be responsible for the training of all effected employees on site. Other responsibilities will include accident investigations, daily inspections for hazards, technical advisor to field management and reporting safety status weekly to the president.

Field Managers - What will the field managers responsibilities be in regards to this program.

EXAMPLE:

Field managers will be responsible for the daily inspections with the safety personnel, overall compliance with the written program, enforcement of program requirements and ensuring employees are working in a safe manner when exposed to any and all fall hazards. These managers will also be held responsible for weekly safety meetings which will be held with subcontractor and employee representatives.

Construction Workforce - What will be the workforces responsibilities in regards to this program.

EXAMPLE:

Construction workers are responsible to actively participate in all tool box talks, report any fall hazards to management, work in a safe manner and adhere to the fall prevention and protection requirements of this program. These workers are also responsible for all specified daily inspections on all personal fall arrest equipment, before use.

IV. ACCOUNTABILITY AND ENFORCEMENT

Accountability Measures - In this section explain what your companies approach will be to hold personnel accountable for complying with this program.

EXAMPLE

All field personnel will be held accountable for the enforcement and compliance with this program through annual and/or end of job reviews of the following criteria.

1. The overall job incident rate and the number of fall injuries as compared to company average.
2. Review of documented daily inspections, focusing on repeat discrepancies.
3. Review of accident investigations and corrective measures taken.

The review of these areas will be calculated into both prospected bonuses and annual performance raises.

Enforcement Policy - In this section explain what the companies enforcement policy will be.

EXAMPLE:

This company's enforcement policy will be both positive and negative enforcement with the following guidelines.

1. First offense employee will be written up regarding the violation and records will be maintained on site.
2. Second offense the employee will be dismissed from the site for a period of three days without pay, additional documentation will be recorded.
3. Third offense within a six month period, employee will be terminated.
4. Any employee who works six months without violating this program will receive a $200 bonus.

V. HAZARD IDENTIFICATION AND ELIMINATION

Job Site Inspections - In this section outline what the minimum requirements will be for the purpose of job site inspections.

EXAMPLE:

All company job sites will be inspected at least once per day by both field managers and the safety personnel. In this daily inspection these individuals will focus on the following hazards.

1. Any area or activity which exposes an employee to a fall hazard.
2. Falls hazards associated with the following areas;
   a) Scaffolds

b) Ladders
c) Steel erection
d) Roofing
e) Floor holes
f) Open sided floors
g) Scissors lifts.

3. Records of the daily inspections will be maintained by the safety personnel.

Analyzing the Work Area - In this section explain what methods will be used to analyze the work area for fall hazards.

EXAMPLE:

In analyzing the work area management and safety personnel will review work conditions for current and upcoming fall hazards. This will be accomplished with a review of the blueprints, current job status and assistance from field personnel. In analyzing the work area focus on those areas most likely to result in falls and the activities that workers will be doing.

Pre-Planning for Fall Prevention - In this section explain how the company will pre-plan to prevent employees from being injured from falls.

EXAMPLE:

Our company will pre-plan for fall prevention by completing the following tasks/responsibilities.

1. Order and install stairways with the guardrails already attached.
2. Have the designer/architect specify proper anchor points for personal fall arrest systems.
3. All floor openings for ductwork, plumbing etc., will not be cut until the material is going through the floor, eliminating the need for covers.
4. All open sided floors will have guardrails attached before employees will be allowed to work on this level.
5. All scaffold systems, regardless of height, will have guardrails attached.

VI. FALL PREVENTION

Engineering Controls - In this section explain what engineering controls will be used to limit fall exposure to the employees.

EXAMPLE:

Our company, during steel erection processes, will incorporate the following engineering controls.

1. A maximum amount of the structure will be assembled on the ground minimizing the fall exposures.

2. All horizontal members will have a horizontal lifeline attached on the ground allowing access to an anchor point for exposed iron workers.
3. In areas where lifelines or other conventional methods are infeasible, safety nets will be used.

Alternate Work Methods - In this section explain what alternate work methods will be incorporated to minimize the fall exposures to effected employees.

EXAMPLE:

The alternate work methods incorporated with this company will include the following.

1. All steel erection and concrete precast erection will be connected from articulating boom lifts by employees trained in this task and on the equipment.
2. Controlled access zones are not allowed for leading edge operations with our company. The alternate work method employed will include a horizontal life line behind the leading edge, designed for multiple employees, with retractable lanyards attached for the employees working on the leading edge. This method will provide an effective active fall protection system.

VII. CONVENTIONAL FALL PROTECTION

Guardrails - In this area explain the type of guardrails, and their requirements, which will be used to protect employees.

EXAMPLE:

On all of our projects, only guardrails made from wood and wire rope will be acceptable. All guardrail systems will comply with the current OSHA standards. These guardrails will be placed in the following areas.

1. On all stair systems.
2. On all open sided floors.
3. Around all holes which are too large for hole covers.
4. On all elevator shaft openings.

Safety Nets - If you will be incorporating safety nets, in this section explain the minimum requirements for their use and installation.

EXAMPLE:

Safety nets will be used only during steel erection activities, when working over water and on unique projects when other conventional systems (Guardrails, hole covers) are not feasible. In the event safety nets are employed with the direction of safety personnel, the following guidelines will be followed.

1. All nets will be designed for personal fall and debris protection.
2. Nets will be installed, tested and inspected by a competent person.
3. Safety personnel will inspect nets daily.
4. All OSHA requirements will be strictly adhered to.

Hole Covers - In this section explain what the minimum requirements for hole covers will be for your company.

EXAMPLE:

With our company we will minimize the use of hole covers with engineering controls. In the event covers are required they will meet the following requirements.

1. For hole covers in areas of personnel traffic, and dimensions of less than 24 inches x 24 inches, all hole covers will have a 2 x 6 framework covered with 3/4 inch CDX plywood, secured with nails and have the word hole written on the cover.
2. For larger holes, the field engineer will specify steel plate which will cover all large holes, be secured and properly marked.

Personal Fall Protection Systems - In this section specifically identify what type of personal fall arrest systems will be allowed on the job.

EXAMPLE:

All employees on any of our projects that will be required to wear a personal fall arrest system will follow these guidelines.

1. Only a full body harness is allowed for fall arrest.
2. Only shock absorbing lanyards or retractable lanyards are acceptable.
3. All lanyards will have locking snaphooks.
4. All personal fall arrest systems will be inspected before each use by the employee.

VIII. SPECIALIZED FALL PROTECTION

Controlled Access Zones - In this section explain if and where controlled access zones will be allowed.

EXAMPLE:

Controlled access zones will not be allowed on any of our projects; or controlled access zones will only be allowed for the use of overhand brick laying operations and the following guidelines will be followed.

1. During these operations a safety monitor will be established at thelower levels.
2. Only brick layers will be allowed inside this zone.

3. The controlled access zone will be cleared with the site safety professional before being established.

Warning Line System - In this section explain if warning lines are allowed, and if not what methods will be employed to protect roofing contractors.

EXAMPLE:

Warning line systems will not be allowed during the roofing operations. In these activities only the following will be acceptable during these operations.

1. An acceptable guardrail system will be placed around the entire roof.
2. Safety nets will be installed around the entire roof.
3. Personal fall arrest systems may be used with the guidance of the safety professional.

Safety Monitoring System - In this section explain in what situations, and special circumstances, the safety monitoring system will be allowed.

EXAMPLE:

Safety monitors will only be allowed as a lower monitor for brick layers who have successfully established a controlled access zone with the permission of the safety coordinator. In these situations, the safety monitor will meet the following guidelines.

1. Have no other duties other than acting as a safety monitor, no exceptions.
2. Will wear a red vest to identify them as a safety monitor.
3. Will remain in place as long as a controlled access zone is in place.

Fall Protection Plans - In this section explain if these plans will be allowed and under what conditions.

EXAMPLE:

Under no circumstances will fall protection plans be allowed on any of our projects because these plans allow the excessive fall exposure to effected employees.

IX. APPLICATION OF FALL PROTECTION SYSTEMS

Conventional/Specialized Systems - In this section explain for each of the conventional and specialized systems being allowed for use specifically where they will be implemented.

EXAMPLE:

Guardrail systems will be applied to all of the following areas.

1. Permanent and temporary stairs

2. Around large holes
3. During roofing operations

(follow this procedure for the remaining conventional and specialized systems in use)

X. INSPECTION, STORAGE AND MAINTENANCE OF FALL PROTECTION SYSTEMS

Conventional and Specialized Systems - In this section explain what your companies policies will be regarding the inspection of the systems in use.

EXAMPLE:

Guardrail systems on all of our projects will be inspected under the following guidelines.

1. Daily, a visual inspection will be completed by the safety coordinator and project manager.
2. Weekly, a complete structural inspection will be completed by a competent person.

(Follow this procedure for all systems in use. All personal fall arrest systems should be inspected in accordance with the manufacturers directions.)

XI. TRAINING

Competent Person Trainer Requirements/Responsibilities - In this section explain what this persons responsibilities will be.

EXAMPLE:

The competent person trainer on all of our projects will be adequately trained in the fall protection systems in use and will be responsible for training all field employees during the new employee orientation. In the event a new system is employed, additional training on this system will commence immediately to all effected employees.

Documentation Requirements - In this section explain the minimum documentation requirements for the field training of employees.

EXAMPLE:

All employees trained in fall protection will be documented in the following manner.

1. The date of the training
2. The employees printed name and signature
3. The printed name and signature of the trainer
4. The specific subjects covered in the training session

Employee Selection - In this section explain what methods will be employed to select employees who will be allowed to work in fall hazard areas.

EXAMPLE:

All employees allowed to work with fall exposures, and trained to protect themselves, will meet the following criteria.

1. No employees with disorientation difficulties will be allowed to work at heights.
2. Employees with medical evidence of epileptic backgrounds will not be allowed to work at heights.
3. Employees who have difficulty understanding how to adequately protect themselves will not be allowed to work at heights.

XII. RESCUE PROCEDURES

Rescue Methods/Options of Fallen Personnel - In this section explain what methods will be used to rescue fallen personnel.

EXAMPLE:

All employees/individuals will be rescued by on site trained personnel trained in rescue procedures with the use of scissor/boom lifts, ladders and man baskets. Rescue personnel will decide which method is most effective in this situation.

Communication Issues - In this section explain what the communication procedures will be in the event of a fall.

EXAMPLE:

In the event of a fall the following people will be notified as soon as possible.

1. Trained rescue personnel
2. Fire department or emergency medical services
3. Project manager/safety coordinator
4. Victims family

Communication Issues - In this section explain what procedures will be followed regarding communication issues.

EXAMPLE:

The company has decided that at the beginning of each project the safety coordinator will discuss possible rescue operations with local emergency services and follow their specific recommendations. These recommendations will be in writing and filed as an amendment to this safety program.

XIII. ACCIDENT/INCIDENT INVESTIGATION

Conducting the Investigation - In this section explain who is responsible to complete the investigation.

EXAMPLE:

All accident investigations will be completed by the site safety coordinator.

Documentation - In this section explain the minimum requirements regarding documentation for an accident.

EXAMPLE:

The safety coordinator will complete and file the following documentation.

1. Interviews with co-workers and witnesses
2. OSHA first report of injury
3. Insurance accident investigation forms
4. Company accident investigation forms

Interviews - In this section outline the interview procedure, and who will be interviewed.

EXAMPLE:

The safety coordinator accompanied by the project manager and victims foreman will interview the following personnel for evidence only, do not look for fault.

1. Victims friends
2. Co-workers
3. Witnesses
4. Foreman

Reporting Requirements - In this section explain what the reporting will be for the safety coordinator.

EXAMPLE:

The safety coordinator will report this accident to the following departments.

1. Company insurance representative
2. Corporate home office
3. Corporate attorney

XIV. PROGRAM EVALUATION

Evaluation of the Program - In this entire chapter the company needs to identify those methods that will be employed to constantly evaluate and improve their fall prevention/protection performance.

EXAMPLE:

Our company will constantly strive to improve the performance of our fall prevention/protection to the benefit of our employees. Our goal is to improve performance by 10% each year. The criteria used to evaluate this performance will be the following.

1. Accident/incident reports
2. Medical reports
3. Incident rates
4. Management Employee Compliance
5. Industry Comparison

Program/Plan Evaluation

Key issues to be discussed within this section include:

1. Accident/Incident reporting.
2. Medical reports.
3. Incident rates.
4. Management/Employee compliance.
5. Industry comparison.
6. Conclusion.

Program/Plan Evaluation

The evaluation and continual modification of a company's program or plan is an essential part of providing a safe work environment free of falls. In evaluating the program a number of areas may be addressed. The following are by no means a comprehensive list of areas that a company has to look at in their evaluation process. This list and accompanying explanations will assist contractors in some of the processes involved in the evaluation of the programs overall effectiveness.

Accident/Incident Reports

Accident and incident reports, as well as near miss reports, are a very good source of material which may identify problem areas within the fall protection program. A review of these reports may indicate some of the following concerns.

1. A high incidence of specific type of fall injuries. For example, you may have a large percentage of falls from scaffolding.

2. These reports may indicate that a number of fall related injuries were from employees who had the same supervisor, project manager or safety coordinator.

3. These reports may indicate that a majority of the fall accidents were happening early Monday morning.

4. These reports may indicate that the accidents were happening during a specific job process. For example, most injuries happened during the installation of HVAC ductwork.

5. They may indicate that a specific trade is experiencing a high rate of fall injuries.

Medical Reports

The medical reports that a contractor receives from the attending physician are another valuable information source. These reports should also be evaluated in regards to the written program. Some of the information that could be gathered from these reports include:

1. The types of injuries that the contractor is experiencing from falls. For example, you may have a high rate of broken legs which are effecting the company's workers' compensation rating.

2. There may be evidence of possible inebriation reported by the physician, in which case the contractor needs to immediately address the situation.

3. There may be reports from the physician which indicate that employees should not have been allowed to work at heights. For example, allowing employees with a history of seizures to work at heights.

4. These medical reports may also indicate other trends related to the physical ability of injured employees to work in the conditions present when the injury happened.

Incident Rates

Incident rates, for injuries and lost time accidents, can be calculated to give management an idea of the overall performance of the company's safety program. This information can be further broken down as an annual tracking tool which will demonstrate in a graph form if the modifications to the program are effective. By doing this the safety personnel will have a visual tool to present to management. Some of the types of information which can be displayed from this information include:

1. The incident rates for any of the following areas:

    a) Specific project
    b) A specific trade
    c) A specific subcontractor
    d) A specific supervisor, safety coordinator or project manager
    e) Incident rates for days of the week
    f) Incident rates for months of the year
    g) Incident rates for types of injuries

By calculating and reviewing this information the safety director will be able to identify if there are any areas of concern relating to hazards on their projects. This will also assist, when completed

annually, in tracking the improvement of any changes made within the company's approach, enforcement or overall approach in providing a safe work environment.

Management/Employee Compliance

Regardless of the detail or good intentions of any safety program, if management and the employees do not follow this program there will inevitably be accidents. The safety director needs to address this issue to avoid the possibility that the safety programs will become a “Paper Tiger.” The following are some methods that the safety director may use to identify if compliance has become an issue.

1. Review disciplinary reports for evidence that a specific individual, management team or subcontractor is allowed to continue to operate without any concern for the programs requirements.

2. Identify any individuals who consistently have very high accident rates and are allowed to continue with the same work practices by management.

3. Identify if the company's disciplinary/enforcement policy is being adhered to. If there is no evidence that this aspect has been followed, this may be evidence that management is unwilling to enforce this policy.

4. Identify individuals who consistently have very low injury rates, and investigate why these personnel have done so well.

5. There may be other underlying factors which effect other personnel. One possible explanation would be a drastic difference in the hazards present at different job sites.

This evaluation alone will not explain why some areas are performing better than others. It is merely one set of data involved in the overall evaluation process. Safety personnel should be cautioned not to explain away non-compliance based on this issue alone. Some factors which may be contributing to this problem could be:

1. There is inadequate training of all field personnel.

2. There are inadequate inspections by competent personnel to identify job hazards.

3. There is little or no pre-planning in regard to safety resulting in extensive hazards.

4. There is inadequate safety equipment available for site personnel.

5. Safety equipment or systems are being used incorrectly.

6. The written program may not be clear or even address these issues.

7. There may be a credibility problem between labor and management. In other words, labor may believe that management doesn't care about their safety, resulting in a confrontational dialogue between the two factions.

Industry Comparison

Another evaluation tool which identifies or tracks the company's standing in industry is the comparison against other contractors within the same industry specialty. By doing this the contractor will be able, at a minimum, to identify if they are above or below the average. Some of the areas a contractor may wish to look at include:

1. Incident rates

2. Lost time rates

3. Experience Modification Rating, EMR (related to workers compensation)

Conclusion

The goal of the safety director is to evaluate the company and programs in as much detail as possible. Once this evaluation process is complete, they will have enough data available to begin to identify which areas need to be addressed in order to lower accidents. Once these areas have been addressed the process of developing alternatives begins.

When the changes have been made, communicated and followed up upon the safety director will complete the evaluation process again. If followed on an annual basis the director will be able to track the company's progress toward continual improvement in providing a safe work environment.

Employee Training Requirements

Key issues to be discussed in this section include:

1. Employee orientations.

2. Minimum employee training requirements.

3. Training documentation requirements.

Employee Orientations

New employee orientations should be held for all employees that enter the job-site, especially to make them aware of the unique hazards that may be present. This initial training of personnel needs to be accomplished by an individual qualified to perform hazard analysis, and address the issues that are critical to these employees. This orientation should include at a minimum what the fall hazards are on this job, when and where personal fall arrest equipment is required, what the enforcement and disciplinary policies are, and the proper use, maintenance and inspection of all fall protection systems currently employed.

Minimum Training Requirements

At a minimum, the employer shall provide a training program for each employee who might be exposed to a fall. The program shall enable each employee to recognize the hazards of falling and shall train each employee in the procedures to be followed in order to minimize these hazards. Some employee training considerations include the following:

1. Training in the selection and use of personal fall arrest systems, including:

    a) Application limits,
    b) Proper anchoring and tie-off techniques,
    c) Estimating free fall distance,
    d) Determining deceleration distance,
    e) Determining total fall distance especially with shock-absorbing lanyards,
    f) Methods and use of all fall protection systems,
    g) Inspection of system, and
    h) Storage & maintenance of the equipment.

2. Training in the safe use of all fall protection systems.

3. The limitations of all fall protection systems in use.

4. Rescue procedures in the event an individual falls.

Documentation Requirements

The training of employees must be documented/certified, and a written record of this training must be maintained at the job. For a sample training form refer to the appendix. This documentation must contain the following:

1. The name of the employee trained.

2. The date or dates of the training.

3. The signature of the person who conducted the training or the signature of the employer.

Note: If the employer is relying on training that was completed by the employees previous employer, then the training documentation of the current employer must show the date that they determined the prior training was adequate rather than the date of actual training.

Retraining Requirements

Retraining may be required when the employer has reason to believe that any employee who has already been trained does not understand the training, hazards or corrective measures. If this becomes the case, the employer must retrain the effected employee(s).

Circumstances where retraining is required include, but are not limited to situations where:

1. Changes in the workplace render previous training obsolete or inadequate.

2. Changes in the type of fall protection systems or equipment being used that was not covered in the initial training.

3. Inadequacies in the employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the appropriate understanding or skill.

29 CFR, Part 1926 – Subpart M

Fall Protection

1926.500 Scope, application, and definitions applicable to this subpart

(a)

"Scope and application."

(a)(1)

This subpart sets forth requirements and criteria for fall protection in construction workplaces covered under 29 CFR part 1926. Exception: The provisions of this subpart do not apply when employees are making an inspection, investigation, or assessment of workplace conditions prior to the actual start of construction work or after all construction work has been completed.

(a)(2)

Section 1926.501 sets forth those workplaces, conditions, operations, and circumstances for which fall protection shall be provided except as follows:

(a)(2)(i)

Requirements relating to fall protection for employees working on scaffolds are provided in subpart L of this part.

(a)(2)(ii)

Requirements relating to fall protection for employees working on certain cranes and derricks are provided in subpart N of this part.

(a)(2)(iii)

Requirements relating to fall protection for employees performing steel erection work are provided in 1926.105 and in subpart R of this part.

(a)(2)(iv)

Requirements relating to fall protection for employees working on certain types of equipment used in tunneling operations are provided in subpart S of this part.

(a)(2)(v)

Requirements relating to fall protection for employees engaged in the construction of electric transmission and distribution lines and equipment are provided in subpart V of this part.

(a)(2)(vi)

Requirements relating to fall protection for employees working on stairways and ladders are provided in subpart X of this part.

(a)(3)

Section 1926.502 sets forth the requirements for the installation, construction, and proper use of fall protection required by part 1926, except as follows:

(a)(3)(i)

Performance requirements for guardrail systems used on scaffolds and performance requirements for falling object protection used on scaffolds are provided in subpart L of this part.

(a)(3)(ii)

Performance requirements for stairways, stairrail systems, and handrails are provided in subpart X of this part.

(a)(3)(iii)

Additional performance requirements for personal climbing equipment, lineman's body belts, safety straps, and lanyards are provided in Subpart V of this part.

(a)(3)(iv)

Section 1926.502 does not apply to steel erection activities. (Note: Section 1926.104 sets the criteria for body belts, lanyards and lifelines used for fall protection in steel erection activities. Paragraphs (b), (c) and (f) of 1926.107 provide definitions for the pertinent terms).

..1926.500(a)(4)

(a)(4)

Section 1926.503 sets forth requirements for training in the installation and use of fall protection systems, except in relation to steel erection activities.

(b)

Definitions.

"Anchorage" means a secure point of attachment for lifelines, lanyards or deceleration devices.

"Body belt (safety belt)" means a strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.

"Body harness" means straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system.

"Buckle" means any device for holding the body belt or body harness closed around the employee's body.

"Connector" means a device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabiner, or it may be an integral component of part of the system (such as a buckle or dee-ring sewn into a body belt or body harness, or a snap-hook spliced or sewn to a lanyard or self-retracting lanyard).

"Controlled access zone (CAZ)" means an area in which certain work (e.g., overhand bricklaying) may take place without the use of guardrail systems, personal fall arrest systems, or safety net systems and access to the zone is controlled.

"Dangerous equipment" means equipment (such as pickling or galvanizing tanks, degreasing units, machinery, electrical equipment, and other units) which, as a result of form or function, may be hazardous to employees who fall onto or into such equipment.

"Deceleration device" means any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.

"Deceleration distance" means the additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an

employee's body belt or body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.

"Equivalent" means alternative designs, materials, or methods to protect against a hazard which the employer can demonstrate will provide an equal or greater degree of safety for employees than the methods, materials or designs specified in the standard.

"Failure" means load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.

"Free fall" means the act of falling before a personal fall arrest system begins to apply force to arrest the fall.

"Free fall distance" means the vertical displacement of the fall arrest attachment point on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.

"Guardrail system" means a barrier erected to prevent employees from falling to lower levels.

"Hole" means a gap or void 2 inches (5.1 cm) or more in its least dimension, in a floor, roof, or other walking/working surface.

"Infeasible" means that it is impossible to perform the construction work using a conventional fall protection system (i.e., guardrail system, safety net system, or personal fall arrest system) or that it is technologically impossible to use any one of these systems to provide fall protection.

"Lanyard" means a flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.

"Leading edge" means the edge of a floor, roof, or formwork for a floor or other walking/working surface (such as the deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed. A leading edge is considered to be an "unprotected side and edge" during periods when it is not actively and continuously under construction.

"Lifeline" means a component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

"Low-slope roof" means a roof having a slope less than or equal to 4 in 12 (vertical to horizontal).

"Lower levels" means those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.

"Mechanical equipment" means all motor or human propelled wheeled equipment used for roofing work, except wheelbarrows and mopcarts.

"Opening" means a gap or void 30 inches (76 cm) or more high and 18 inches (48 cm) or more wide, in a wall or partition, through which employees can fall to a lower level.

"Overhand bricklaying and related work" means the process of laying bricks and masonry units such that the surface of the wall to be jointed is on the opposite side of the wall from the mason, requiring the mason to lean over the wall to complete the work. Related work includes mason tending and electrical installation incorporated into the brick wall during the overhand bricklaying process.

"Personal fall arrest system" means a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. As of January 1, 1998, the use of a body belt for fall arrest is prohibited.

"Positioning device system" means a body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.

"Rope grab" means a deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.

"Roof" means the exterior surface on the top of a building. This does not include floors or formwork which, because a building has not been completed, temporarily become the top surface of a building.

"Roofing work" means the hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work, but not including the construction of the roof deck.

"Safety-monitoring system" means a safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.

"Self-retracting lifeline/lanyard" means a deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during

normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.

"Snaphook" means a connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snaphooks are generally one of two types:

(b)(1)

The locking type with a self-closing, self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection; or

(b)(2)

The non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection. As of January 1, 1998, the use of a non-locking snaphook as part of personal fall arrest systems and positioning device systems is prohibited.

"Steep roof" means a roof having a slope greater than 4 in 12 (vertical to horizontal).

"Toeboard" means a low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.

"Unprotected sides and edges" means any side or edge (except at entrances to points of access) of a walking/working surface, e.g., floor, roof, ramp, or runway where there is no wall or guardrail system at least 39 inches (1.0 m) high.

"Walking/working surface" means any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel but not including ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.

"Warning line system" means a barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.

"Work area" means that portion of a walking/working surface where job duties are being performed.

1926.501 Duty to have fall protection

(a)

"General."

(a)(1)

This section sets forth requirements for employers to provide fall protection systems. All fall protection required by this section shall conform to the criteria set forth in 1926.502 of this subpart.

(a)(2)

The employer shall determine if the walking/working surfaces on which its employees are to work have the strength and structural integrity to support employees safely. Employees shall be allowed to work on those surfaces only when the surfaces have the requisite strength and structural integrity.

(b)

(b)(1)

"Unprotected sides and edges." Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet (1.8 m) or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems.

(b)(2)

"Leading edges."

(b)(2)(i)

Each employee who is constructing a leading edge 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems. Exception: When the employer can demonstrate that it is infeasible or creates a greater hazard to use these systems, the employer shall develop and implement a fall protection plan which meets the requirements of paragraph (k) of 1926.502.

Note: There is a presumption that it is feasible and will not create a greater hazard to implement at least one of the above-listed fall protection systems. Accordingly, the employer has the burden of establishing that it is appropriate to implement a fall protection plan which complies with 1926.502(k) for a particular workplace situation, in lieu of implementing any of those systems.

(b)(2)(ii)

Each employee on a walking/working surface 6 feet (1.8 m) or more above a lower level where leading edges are under construction, but who is not engaged in the leading edge work, shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system. If a guardrail system is chosen to provide the fall protection, and a controlled access zone has already been established for leading edge work, the control line may be used in lieu of a guardrail along the edge that parallels the leading edge.

(b)(3)

"Hoist areas." Each employee in a hoist area shall be protected from falling 6 feet (1.8 m) or more to lower levels by guardrail systems or personal fall arrest systems. If guardrail systems, [or chain, gate, or guardrail] or portions thereof, are removed to facilitate the hoisting operation (e.g., during landing of materials), and an employee must lean through the access opening or out over the edge of the access opening (to receive or guide equipment and materials, for example), that employee shall be protected from fall hazards by a personal fall arrest system.

(b)(4)

"Holes."

(b)(4)(i)

Each employee on walking/working surfaces shall be protected from falling through holes (including skylights) more than 6 feet (1.8 m) above lower levels, by personal fall arrest systems, covers, or guardrail systems erected around such holes.

(b)(4)(ii)

Each employee on a walking/working surface shall be protected from tripping in or stepping into or through holes (including skylights) by covers.

(b)(4)(iii)

Each employee on a walking/working surface shall be protected from objects falling through holes (including skylights) by covers.

..1926.501(b)(5)

(b)(5)

"Formwork and reinforcing steel." Each employee on the face of formwork or reinforcing steel shall be protected from falling 6 feet (1.8 m) or more to lower levels by personal fall arrest systems, safety net systems, or positioning device systems.

(b)(6)

"Ramps, runways, and other walkways." Each employee on ramps, runways, and other walkways shall be protected from falling 6 feet (1.8 m) or more to lower levels by guardrail systems.

(b)(7)

"Excavations."

(b)(7)(i)

Each employee at the edge of an excavation 6 feet (1.8 m) or more in depth shall be protected from falling by guardrail systems, fences, or barricades when the excavations are not readily seen because of plant growth or other visual barrier;

(b)(7)(ii)

Each employee at the edge of a well, pit, shaft, and similar excavation 6 feet (1.8 m) or more in depth shall be protected from falling by guardrail systems, fences, barricades, or covers.

(b)(8)

"Dangerous equipment."

(b)(8)(i)

Each employee less than 6 feet (1.8 m) above dangerous equipment shall be protected from falling into or onto the dangerous equipment by guardrail systems or by equipment guards.

(b)(8)(ii)

Each employee 6 feet (1.8 m) or more above dangerous equipment shall be protected from fall hazards by guardrail systems, personal fall arrest systems, or safety net systems.

..1926.501(b)(9)

(b)(9)

"Overhand bricklaying and related work."

(b)(9)(i)

Except as otherwise provided in paragraph (b) of this section, each employee performing overhand bricklaying and related work 6 feet (1.8 m) or more above lower levels, shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or shall work in a controlled access zone.

(b)(9)(ii)

Each employee reaching more than 10 inches (25 cm) below the level of the walking/working surface on which they are working, shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system.

Note: Bricklaying operations performed on scaffolds are regulated by subpart L - Scaffolds of this part.

(b)(10)

"Roofing work on Low-slope roofs." Except as otherwise provided in paragraph (b) of this section, each employee engaged in roofing activities on low-slope roofs, with unprotected sides and edges 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or a combination of warning line system and guardrail system, warning line system and safety net system, or warning line system and personal fall arrest system, or warning line system and safety monitoring system. Or, on roofs 50-feet (15.25 m) or less in width (see Appendix A to subpart M of this part), the use of a safety monitoring system alone [i.e. without the warning line system] is permitted.

(b)(11)

"Steep roofs." Each employee on a steep roof with unprotected sides and edges 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems with toeboards, safety net systems, or personal fall arrest systems.

(b)(12)

"Precast concrete erection." Each employee engaged in the erection of precast concrete members (including, but not limited to the erection of wall panels, columns, beams, and floor and roof "tees") and related operations such as grouting of precast concrete members, who is 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems, safety net

systems, or personal fall arrest systems, unless another provision in paragraph (b) of this section provides for an alternative fall protection measure. Exception: When the employer can demonstrate that it is infeasible or creates a greater hazard to use these systems, the employer shall develop and implement a fall protection plan which meets the requirements of paragraph (k) of 1926.502.

Note: There is a presumption that it is feasible and will not create a greater hazard to implement at least one of the above-listed fall protection systems. Accordingly, the employer has the burden of establishing that it is appropriate to implement a fall protection plan which complies with 1926.502(k) for a particular workplace situation, in lieu of implementing any of those systems.

..1926.501(b)(13)

(b)(13)

"Residential construction." Each employee engaged in residential construction activities 6 feet (1.8 m) or more above lower levels shall be protected by guardrail systems, safety net system, or personal fall arrest system unless another provision in paragraph (b) of this section provides for an alternative fall protection measure. Exception: When the employer can demonstrate that it is infeasible or creates a greater hazard to use these systems, the employer shall develop and implement a fall protection plan which meets the requirements of paragraph (k) of 1926.502.

Note: There is a presumption that it is feasible and will not create a greater hazard to implement at least one of the above-listed fall protection systems. Accordingly, the employer has the burden of establishing that it is appropriate to implement a fall protection plan which complies with 1926.502(k) for a particular workplace situation, in lieu of implementing any of those systems.

(b)(14)

"Wall openings." Each employee working on, at, above, or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is 6 feet (1.8 m) or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches (1.0 m) above the walking/working surface, shall be protected from falling by the use of a guardrail system, a safety net system, or a personal fall arrest system.

(b)(15)

"Walking/working surfaces not otherwise addressed." Except as provided in 1926.500(a)(2) or in 1926.501 (b)(1) through (b)(14), each employee on a walking/working surface 6 feet (1.8 m) or more above lower levels shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system.

..1926.501(c)

(c)

"Protection from falling objects." When an employee is exposed to falling objects, the employer shall have each employee wear a hard hat and shall implement one of the following measures:

(c)(1)

Erect toeboards, screens, or guardrail systems to prevent objects from falling from higher levels; or,

(c)(2)

Erect a canopy structure and keep potential fall objects far enough from the edge of the higher level so that those objects would not go over the edge if they were accidentally displaced; or,

(c)(3)

Barricade the area to which objects could fall, prohibit employees from entering the barricaded area, and keep objects that may fall far enough away from the edge of a higher level so that those objects would not go over the edge if they were accidentally displaced.

1926.502 Fall protection systems criteria and practices

(a)

"General."

(a)(1)

Fall protection systems required by this part shall comply with the applicable provisions of this section.

(a)(2)

Employers shall provide and install all fall protection systems required by this subpart for an employee, and shall comply with all other pertinent requirements of this subpart before that employee begins the work that necessitates the fall protection.

(b)

"Guardrail systems." Guardrail systems and their use shall comply with the following provisions:

..1926.502(b)(1)

(b)(1)

Top edge height of top rails, or equivalent guardrail system members, shall be 42 inches (1.1 m) plus or minus 3 inches (8 cm) above the walking/working level. When conditions warrant, the height of the top edge may exceed the 45-inch height, provided the guardrail system meets all other criteria of this paragraph.

Note: When employees are using stilts, the top edge height of the top rail, or equivalent member, shall be increased an amount equal to the height of the stilts.

(b)(2)

Midrails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members shall be installed between the top edge of the guardrail system and the walking/working surface when there is no wall or parapet wall at least 21 inches (53 cm) high.

(b)(2)(i)

Midrails, when used, shall be installed at a height midway between the top edge of the guardrail system and the walking/working level.

(b)(2)(ii)

Screens and mesh, when used, shall extend from the top rail to the walking/working level and along the entire opening between top rail supports.

(b)(2)(iii)

Intermediate members (such as balusters), when used between posts, shall be not more than 19 inches (48 cm) apart.

(b)(2)(iv)

Other structural members (such as additional midrails and architectural panels) shall be installed such that there are no openings in the guardrail system that are more than 19 inches (.5 m) wide.

(b)(3)

Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds (890 N) applied within 2 inches (5.1 cm) of the top edge, in any outward or downward direction, at any point along the top edge.

(b)(4)

When the 200 pound (890 N) test load specified in paragraph (b)(3) of this section is applied in a downward direction, the top edge of the guardrail shall not deflect to a height less than 39 inches (1.0 m) above the walking/working level. Guardrail system components selected and constructed in accordance with the Appendix B to subpart M of this part will be deemed to meet this requirement.

(b)(5)

Midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding, without failure, a force of at least 150 pounds (666 N) applied in any downward or outward direction at any point along the midrail or other member.

(b)(6)

Guardrail systems shall be so surfaced as to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.

(b)(7)

The ends of all top rails and midrails shall not overhang the terminal posts, except where such overhang does not constitute a projection hazard.

(b)(8)

Steel banding and plastic banding shall not be used as top rails or midrails.

(b)(9)

Top rails and midrails shall be at least one-quarter inch (0.6 cm) nominal diameter or thickness to prevent cuts and lacerations. If wire rope is used for top rails, it shall be flagged at not more than 6-foot intervals with high-visibility material.

(b)(10)

When guardrail systems are used at hoisting areas, a chain, gate or removable guardrail section shall be placed across the access opening between guardrail sections when hoisting operations are not taking place.

(b)(11)

When guardrail systems are used at holes, they shall be erected on all unprotected sides or edges of the hole.

(b)(12)

When guardrail systems are used around holes used for the passage of materials, the hole shall have not more than two sides provided with removable guardrail sections to allow the passage of materials. When the hole is not in use, it shall be closed over with a cover, or a guardrail system shall be provided along all unprotected sides or edges.

(b)(13)

When guardrail systems are used around holes which are used as points of access (such as ladderways), they shall be provided with a gate, or be so offset that a person cannot walk directly into the hole.

(b)(14)

Guardrail systems used on ramps and runways shall be erected along each unprotected side or edge.

(b)(15)

Manila, plastic or synthetic rope being used for top rails or midrails shall be inspected as frequently as necessary to ensure that it continues to meet the strength requirements of paragraph (b)(3) of this section.

(c)

"Safety net systems." Safety net systems and their use shall comply with the following provisions:

(c)(1)

Safety nets shall be installed as close as practicable under the walking/working surface on which employees are working, but in no case more than 30 feet (9.1 m) below such level. When nets are used on bridges, the potential fall area from the walking/working surface to the net shall be unobstructed.

(c)(2)

Safety nets shall extend outward from the outermost projection of the work surface as follows:

Vertical distance from working level to horizontal plane of net	Minimum required horizontal distance of outer edge of net from the edge of the working surface
Up to 5 feet	8 feet.
More than 5 feet up to 10 feet	10 feet.
More than 10 feet	13 feet.

(c)(3)

Safety nets shall be installed with sufficient clearance under them to prevent contact with the surface or structures below when subjected to an impact force equal to the drop test specified in paragraph (c)(4) of this section.

(c)(4)

Safety nets and their installations shall be capable of absorbing an impact force equal to that produced by the drop test specified in paragraph (c)(4)(i) of this section.

(c)(4)(i)

Except as provided in paragraph (c)(4)(ii) of this section, safety nets and safety net installations shall be drop-tested at the jobsite after initial installation and before being used as a fall protection system, whenever relocated, after major repair, and at 6-month intervals if left in one place. The drop-test shall consist of a 400 pound (180 kg) bag of sand 30 + or - 2 inches (76 + or - 5 cm) in diameter dropped into the net from the highest walking/working surface at which employees are exposed to fall hazards, but not from less than 42 inches (1.1 m) above that level.

(c)(4)(ii)

When the employer can demonstrate that it is unreasonable to perform the drop-test required by paragraph (c)(4)(i) of this section, the employer (or a designated competent person) shall certify that the net and net installation is in compliance with the provisions of paragraphs (c)(3) and (c)(4)(i) of this section by preparing a certification record prior to the net being used as a fall protection system. The certification record must include an identification of the net and net installation for which the certification record is being prepared; the date that it was determined

that the identified net and net installation were in compliance with paragraph (c)(3) of this section and the signature of the person making the determination and certification. The most recent certification record for each net and net installation shall be available at the jobsite for inspection.

..1926.502(c)(5)

(c)(5)

Defective nets shall not be used. Safety nets shall be inspected at least once a week for wear, damage, and other deterioration. Defective components shall be removed from service. Safety nets shall also be inspected after any occurrence which could affect the integrity of the safety net system.

(c)(6)

Materials, scrap pieces, equipment, and tools which have fallen into the safety net shall be removed as soon as possible from the net and at least before the next work shift.

(c)(7)

The maximum size of each safety net mesh opening shall not exceed 36 square inches (230 cm) nor be longer than 6 inches (15 cm) on any side, and the opening, measured center-to-center of mesh ropes or webbing, shall not be longer than 6 inches (15 cm). All mesh crossings shall be secured to prevent enlargement of the mesh opening.

(c)(8)

Each safety net (or section of it) shall have a border rope for webbing with a minimum breaking strength of 5,000 pounds (22.2 kN).

(c)(9)

Connections between safety net panels shall be as strong as integral net components and shall be spaced not more than 6 inches (15 cm) apart.

(d)

"Personal fall arrest systems." Personal fall arrest systems and their use shall comply with the provisions set forth below. Effective January 1, 1998, body belts are not acceptable as part of a personal fall arrest system. Note: The use of a body belt in a positioning device system is acceptable and is regulated under paragraph (e) of this section.

..1926.502(d)(1)

(d)(1)

Connectors shall be drop forged, pressed or formed steel, or made of equivalent materials.

(d)(2)

Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the system.

(d)(3)

Dee-rings and snaphooks shall have a minimum tensile strength of 5,000 pounds (22.2 kN).

(d)(4)

Dee-rings and snaphooks shall be proof-tested to a minimum tensile load of 3,600 pounds (16 kN) without cracking, breaking, or taking permanent deformation.

(d)(5)

Snaphooks shall be sized to be compatible with the member to which they are connected to prevent unintentional disengagement of the snaphook by depression of the snaphook keeper by the connected member, or shall be a locking type snaphook designed and used to prevent disengagement of the snaphook by the contact of the snaphook keeper by the connected member. Effective January 1, 1998, only locking type snaphooks shall be used.

(d)(6)

Unless the snaphook is a locking type and designed for the following connections, snaphooks shall not be engaged:

(d)(6)(i)

directly to webbing, rope or wire rope;

(d)(6)(ii)

to each other;

(d)(6)(iii)

to a dee-ring to which another snaphook or other connector is attached;

(d)(6)(iv)

to a horizontal lifeline; or

(d)(6)(v)

to any object which is incompatibly shaped or dimensioned in relation to the snaphook such that unintentional disengagement could occur by the connected object being able to depress the snaphook keeper and release itself.

(d)(7)

On suspended scaffolds or similar work platforms with horizontal lifelines which may become vertical lifelines, the devices used to connect to a horizontal lifeline shall be capable of locking in both directions on the lifeline.

(d)(8)

Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.

(d)(9)

Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds (22.2 kN).

(d)(10)

(d)(10)(i)

Except as provided in paragraph (d)(10)(ii) of this section, when vertical lifelines are used, each employee shall be attached to a separate lifeline.

(d)(10)(ii)

During the construction of elevator shafts, two employees may be attached to the same lifeline in the hoistway, provided both employees are working atop a false car that is equipped with

guardrails; the strength of the lifeline is 10,000 pounds [5,000 pounds per employee attached] (44.4 kN); and all other criteria specified in this paragraph for lifelines have been met.

..1926.502(d)(11)

(d)(11)

Lifelines shall be protected against being cut or abraded.

(d)(12)

Self-retracting lifelines and lanyards which automatically limit free fall distance to 2 feet (0.61 m) or less shall be capable of sustaining a minimum tensile load of 3,000 pounds (13.3 kN) applied to the device with the lifeline or lanyard in the fully extended position.

(d)(13)

Self-retracting lifelines and lanyards which do not limit free fall distance to 2 feet (0.61 m) or less, ripstitch lanyards, and tearing and deforming lanyards shall be capable of sustaining a minimum tensile load of 5,000 pounds (22.2 kN) applied to the device with the lifeline or lanyard in the fully extended position.

(d)(14)

Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body belts and body harnesses shall be made from synthetic fibers.

(d)(15)

Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds (22.2 kN) per employee attached, or shall be designed, installed, and used as follows:

(d)(15)(i)

as part of a complete personal fall arrest system which maintains a safety factor of at least two; and

(d)(15)(ii)

under the supervision of a qualified person.

..1926.502(d)(16)

(d)(16)

Personal fall arrest systems, when stopping a fall, shall:

(d)(16)(i)

limit maximum arresting force on an employee to 900 pounds (4 kN) when used with a body belt;

(d)(16)(ii)

limit maximum arresting force on an employee to 1,800 pounds (8 kN) when used with a body harness;

(d)(16)(iii)

be rigged such that an employee can neither free fall more than 6 feet (1.8 m), nor contact any lower level;

(d)(16)(iv)

bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet (1.07 m); and,

(d)(16)(v)

have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet (1.8 m), or the free fall distance permitted by the system, whichever is less.

Note: If the personal fall arrest system meets the criteria and protocols contained in Appendix C to subpart M, and if the system is being used by an employee having a combined person and tool weight of less than 310 pounds (140 kg), the system will be considered to be in compliance with the provisions of paragraph (d)(16) of this section. If the system is used by an employee having a combined tool and body weight of 310 pounds (140 kg) or more, then the employer must appropriately modify the criteria and protocols of the Appendix to provide proper protection for such heavier weights, or the system will not be deemed to be in compliance with the requirements of paragraph (d)(16) of this section.

(d)(17)

The attachment point of the body belt shall be located in the center of the wearer's back. The attachment point of the body harness shall be located in the center of the wearer's back near shoulder level, or above the wearer's head.

(d)(18)

Body belts, harnesses, and components shall be used only for employee protection (as part of a personal fall arrest system or positioning device system) and not to hoist materials.

(d)(19)

Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse.

(d)(20)

The employer shall provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves.

(d)(21)

Personal fall arrest systems shall be inspected prior to each use for wear, damage and other deterioration, and defective components shall be removed from service.

(d)(22)

Body belts shall be at least one and five-eighths (1 5/8) inches (4.1 cm) wide.

(d)(23)

Personal fall arrest systems shall not be attached to guardrail systems, nor shall they be attached to hoists except as specified in other subparts of this Part.

(d)(24)

When a personal fall arrest system is used at hoist areas, it shall be rigged to allow the movement of the employee only as far as the edge of the walking/working surface.

..*1926.502(e)*

(e)

"Positioning device systems." Positioning device systems and their use shall conform to the following provisions:

(e)(1)

Positioning devices shall be rigged such that an employee cannot free fall more than 2 feet (.9 m).

(e)(2)

Positioning devices shall be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or 3,000 pounds (13.3 kN), whichever is greater.

(e)(3)

Connectors shall be drop forged, pressed or formed steel, or made of equivalent materials.

(e)(4)

Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of this system.

(e)(5)

Connecting assemblies shall have a minimum tensile strength of 5,000 pounds (22.2 kN)

(e)(6)

Dee-rings and snaphooks shall be proof-tested to a minimum tensile load of 3,600 pounds (16 kN) without cracking, breaking, or taking permanent deformation.

(e)(7)

Snaphooks shall be sized to be compatible with the member to which they are connected to prevent unintentional disengagement of the snaphook by depression of the snaphook keeper by the connected member, or shall be a locking type snaphook designed and used to prevent disengagement of the snaphook by the contact of the snaphook keeper by the connected member. As of January 1, 1998, only locking type snaphooks shall be used.

..1926.502(e)(8)

(e)(8)

Unless the snaphook is a locking type and designed for the following connections, snaphooks shall not be engaged:

(e)(8)(i)

directly to webbing, rope or wire rope;

(e)(8)(ii)

to each other;

(e)(8)(iii)

to a dee-ring to which another snaphook or other connector is attached;

(e)(8)(iv)

to a horizontal lifeline; or

(e)(8)(v)

to any object which is incompatibly shaped or dimensioned in relation to the snaphook such that unintentional disengagement could occur by the connected object being able to depress the snaphook keeper and release itself.

(e)(9)

Positioning device systems shall be inspected prior to each use for wear, damage, and other deterioration, and defective components shall be removed from service.

(e)(10)

Body belts, harnesses, and components shall be used only for employee protection (as part of a personal fall arrest system or positioning device system) and not to hoist materials.

(f)

"Warning line systems." Warning line systems [See 1926.501(b)(10)] and their use shall comply with the following provisions:

(f)(1)

The warning line shall be erected around all sides of the roof work area.

(f)(1)(i)

When mechanical equipment is not being used, the warning line shall be erected not less than 6 feet (1.8 m) from the roof edge.

(f)(1)(ii)

When mechanical equipment is being used, the warning line shall be erected not less than 6 feet (1.8 m) from the roof edge which is parallel to the direction of mechanical equipment operation, and not less than 10 feet (3.1 m) from the roof edge which is perpendicular to the direction of mechanical equipment operation.

(f)(1)(iii)

Points of access, materials handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines.

(f)(1)(iv)

When the path to a point of access is not in use, a rope, wire, chain, or other barricade, equivalent in strength and height to the warning line, shall be placed across the path at the point where the path intersects the warning line erected around the work area, or the path shall be offset such that a person cannot walk directly into the work area.

(f)(2)

Warning lines shall consist of ropes, wires, or chains, and supporting stanchions erected as follows:

(f)(2)(i)

The rope, wire, or chain shall be flagged at not more than 6-foot (1.8 m) intervals with high-visibility material;

(f)(2)(ii)

The rope, wire, or chain shall be rigged and supported in such a way that its lowest point (including sag) is no less than 34 inches (.9 m) from the walking/working surface and its highest point is no more than 39 inches (1.0 m) from the walking/working surface;

(f)(2)(iii)

After being erected, with the rope, wire, or chain attached, stanchions shall be capable of resisting, without tipping over, a force of at least 16 pounds (71 N) applied horizontally against the stanchion, 30 inches (.8 m) above the walking/working surface, perpendicular to the warning line, and in the direction of the floor, roof, or platform edge;

(f)(2)(iv)

The rope, wire, or chain shall have a minimum tensile strength of 500 pounds (2.22 kN), and after being attached to the stanchions, shall be capable of supporting, without breaking, the loads applied to the stanchions as prescribed in paragraph (f)(2)(iii) of this section; and

(f)(2)(v)

The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.

(f)(3)

No employee shall be allowed in the area between a roof edge and a warning line unless the employee is performing roofing work in that area.

(f)(4)

Mechanical equipment on roofs shall be used or stored only in areas where employees are protected by a warning line system, guardrail system, or personal fall arrest system.

(g)

"Controlled access zones." Controlled access zones [See 1926.501(b)(9) and 1926.502(k)] and their use shall conform to the following provisions.

(g)(1)

When used to control access to areas where leading edge and other operations are taking place the controlled access zone shall be defined by a control line or by any other means that restricts access.

(g)(1)(i)

When control lines are used, they shall be erected not less than 6 feet (1.8 m) nor more than 25 feet (7.7 m) from the unprotected or leading edge, except when erecting precast concrete members.

(g)(1)(ii)

When erecting precast concrete members, the control line shall be erected not less than 6 feet (1.8 m) nor more than 60 feet (18 m) or half the length of the member being erected, whichever is less, from the leading edge.

(g)(1)(iii)

The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge.

(g)(1)(iv)

The control line shall be connected on each side to a guardrail system or wall.

(g)(2)

When used to control access to areas where overhand bricklaying and related work are taking place:

(g)(2)(i)

The controlled access zone shall be defined by a control line erected not less than 10 feet (3.1 m) nor more than 15 feet (4.5 m) from the working edge.

(g)(2)(ii)

The control line shall extend for a distance sufficient for the controlled access zone to enclose all employees performing overhand bricklaying and related work at the working edge and shall be approximately parallel to the working edge.

(g)(2)(iii)

Additional control lines shall be erected at each end to enclose the controlled access zone.

(g)(2)(iv)

Only employees engaged in overhand bricklaying or related work shall be permitted in the controlled access zone.

(g)(3)

Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:

(g)(3)(i)

Each line shall be flagged or otherwise clearly marked at not more than 6-foot (1.8 m) intervals with high-visibility material.

(g)(3)(ii)

Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches (1 m) from the walking/working surface and its highest point is not more than 45 inches (1.3 m) [50 inches (1.3 m) when overhand bricklaying operations are being performed] from the walking/working surface.

(g)(3)(iii)

Each line shall have a minimum breaking strength of 200 pounds (.88 kN).

(g)(4)

On floors and roofs where guardrail systems are not in place prior to the beginning of overhand bricklaying operations, controlled access zones shall be enlarged, as necessary, to enclose all points of access, material handling areas, and storage areas.

(g)(5)

On floors and roofs where guardrail systems are in place, but need to be removed to allow overhand bricklaying work or leading edge work to take place, only that portion of the guardrail necessary to accomplish that day's work shall be removed.

..1926.502(h)

(h)

"Safety monitoring systems." Safety monitoring systems [See 1926.501(b)(10) and 1926.502(k)] and their use shall comply with the following provisions:

(h)(1)

The employer shall designate a competent person to monitor the safety of other employees and the employer shall ensure that the safety monitor complies with the following requirements:

(h)(1)(i)

The safety monitor shall be competent to recognize fall hazards;

(h)(1)(ii)

The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner;

(h)(1)(iii)

The safety monitor shall be on the same walking/working surface and within visual sighting distance of the employee being monitored;

(h)(1)(iv)

The safety monitor shall be close enough to communicate orally with the employee; and

(h)(1)(v)

The safety monitor shall not have other responsibilities which could take the monitor's attention from the monitoring function.

(h)(2)

Mechanical equipment shall not be used or stored in areas where safety monitoring systems are being used to monitor employees engaged in roofing operations on low-slope roofs.

..1926.502(h)(3)

(h)(3)

No employee, other than an employee engaged in roofing work [on low-sloped roofs] or an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.

(h)(4)

Each employee working in a controlled access zone shall be directed to comply promptly with fall hazard warnings from safety monitors.

(i)

"Covers." Covers for holes in floors, roofs, and other walking/working surfaces shall meet the following requirements:

(i)(1)

Covers located in roadways and vehicular aisles shall be capable of supporting, without failure, at least twice the maximum axle load of the largest vehicle expected to cross over the cover.

(i)(2)

All other covers shall be capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time.

(i)(3)

All covers shall be secured when installed so as to prevent accidental displacement by the wind, equipment, or employees.

(i)(4)

All covers shall be color coded or they shall be marked with the word "HOLE" or "COVER" to provide warning of the hazard.

Note: This provision does not apply to cast iron manhole covers or steel grates used on streets or roadways.

..1926.502(j)

(j)

"Protection from falling objects." Falling object protection shall comply with the following provisions:

(j)(1)

Toeboards, when used as falling object protection, shall be erected along the edge of the overhead walking/working surface for a distance sufficient to protect employees below.

(j)(2)

Toeboards shall be capable of withstanding, without failure, a force of at least 50 pounds (222 N) applied in any downward or outward direction at any point along the toeboard.

(j)(3)

Toeboards shall be a minimum of 3 1/2 inches (9 cm) in vertical height from their top edge to the level of the walking/working surface. They shall have not more than 1/4 inch (0.6 cm) clearance above the walking/working surface. They shall be solid or have openings not over 1 inch (2.5 cm) in greatest dimension.

(j)(4)

Where tools, equipment, or materials are piled higher than the top edge of a toeboard, paneling or screening shall be erected from the walking/working surface or toeboard to the top of a guardrail system's top rail or midrail, for a distance sufficient to protect employees below.

(j)(5)

Guardrail systems, when used as falling object protection, shall have all openings small enough to prevent passage of potential falling objects.

(j)(6)

During the performance of overhand bricklaying and related work:

(j)(6)(i)

No materials or equipment except masonry and mortar shall be stored within 4 feet (1.2 m) of the working edge.

..1926.502(j)(6)(ii)

(j)(6)(ii)

Excess mortar, broken or scattered masonry units, and all other materials and debris shall be kept clear from the work area by removal at regular intervals.

(j)(7)

During the performance of roofing work:

(j)(7)(i)

Materials and equipment shall not be stored within 6 feet (1.8 m) of a roof edge unless guardrails are erected at the edge.

(j)(7)(ii)

Materials which are piled, grouped, or stacked near a roof edge shall be stable and self-supporting.

(j)(8)

Canopies, when used as falling object protection, shall be strong enough to prevent collapse and to prevent penetration by any objects which may fall onto the canopy.

(k)

"Fall protection plan." This option is available only to employees engaged in leading edge work, precast concrete erection work, or residential construction work (See 1926.501(b)(2), (b)(12), and (b)(13)) who can demonstrate that it is infeasible or it creates a greater hazard to use conventional fall protection equipment. The fall protection plan must conform to the following provisions.

(k)(1)

The fall protection plan shall be prepared by a qualified person and developed specifically for the site where the leading edge work, precast concrete work, or residential construction work is being performed and the plan must be maintained up to date.

(k)(2)

Any changes to the fall protection plan shall be approved by a qualified person.

(k)(3)

A copy of the fall protection plan with all approved changes shall be maintained at the job site.

(k)(4)

The implementation of the fall protection plan shall be under the supervision of a competent person.

(k)(5)

The fall protection plan shall document the reasons why the use of conventional fall protection systems (guardrail systems, personal fall arrest systems, or safety nets systems) are infeasible or why their use would create a greater hazard.

(k)(6)

The fall protection plan shall include a written discussion of other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection from the conventional fall protection systems. For example, the employer shall discuss the extent to which scaffolds, ladders, or vehicle mounted work platforms can be used to provide a safer working surface and thereby reduce the hazard of falling.

(k)(7)

The fall protection plan shall identify each location where conventional fall protection methods cannot be used. These locations shall then be classified as controlled access zones and the employer must comply with the criteria in paragraph (g) of this section.

(k)(8)

Where no other alternative measure has been implemented, the employer shall implement a safety monitoring system in conformance with 1926.502(h).

(k)(9)

The fall protection plan must include a statement which provides the name or other method of identification for each employee who is designated to work in controlled access zones. No other employees may enter controlled access zones.

..1926.502(k)(10)

(k)(10)

In the event an employee falls, or some other related, serious incident occurs, (e.g., a near miss) the employer shall investigate the circumstances of the fall or other incident to determine if the fall protection plan needs to be changed (e.g. new practices, procedures, or training) and shall implement those changes to prevent similar types of falls or incidents.

1926.503 Training requirements

(a)

"Training Program."

(a)(1)

The employer shall provide a training program for each employee who might be exposed to fall hazards. The program shall enable each employee to recognize the hazards of falling and shall train each employee in the procedures to be followed in order to minimize these hazards.

(a)(2)

The employer shall assure that each employee has been trained, as necessary, by a competent person qualified in the following areas:

(a)(2)(i)

The nature of fall hazards in the work area;

(a)(2)(ii)

The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used;

(a)(2)(iii)

The use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, controlled access zones, and other protection to be used;

(a)(2)(iv)

The role of each employee in the safety monitoring system when this system is used;

..1926.503(a)(2)(v)

(a)(2)(v)

The limitations on the use of mechanical equipment during the performance of roofing work on low-sloped roofs;

(a)(2)(vi)

The correct procedures for the handling and storage of equipment and materials and the erection of overhead protection; and

(a)(2)(vii)

The role of employees in fall protection plans;

(a)(2)(viii)

The standards contained in this subpart.

(b)

"Certification of training."

(b)(1)

The employer shall verify compliance with paragraph (a) of this section by preparing a written certification record. The written certification record shall contain the name or other identity of the employee trained, the date(s) of the training, and the signature of the person who conducted the training or the signature of the employer. If the employer relies on training conducted by another employer or completed prior to the effective date of this section, the certification record shall indicate the date the employer determined the prior training was adequate rather than the date of actual training.

(b)(2)

The latest training certification shall be maintained.

(c)

"Retraining." When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by paragraph (a) of this section, the employer shall retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

..1926.503(c)(1)

(c)(1)

Changes in the workplace render previous training obsolete; or

(c)(2)

Changes in the types of fall protection systems or equipment to be used render previous training obsolete; or

(c)(3)

Inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite understanding or skill.

Note: The following appendices to subpart M of this part serve as non-mandatory guidelines to assist employers in complying with the appropriate requirements of subpart M of this part.

Definitions – Fall Protection

Access: movement by physical or mechanical means to reach a workstation.

Aerial Lifts: mechanical devices such as manlifts, man-baskets, scissor lifts and bucket trucks used for access to heights.

Anchorage means a secure point of attachment for lifelines, lanyards or deceleration devices.

Arresting Force: the amount of force on a worker or test weight resulting from the fall protection system stopping the fall. This usually expresses the peak force experienced during the fall arrest. (See maximum arrest force)

Body belt (safety belt) means a strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.

Body harness means straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system.

Body-Restraint System: a single or multiple strap that can be secured around a worker and to which he can attach to a load-bearing anchorage for travel restriction with limited fall hazard such as body belts, chest harnesses and full body harnesses.

Buckle means any device for holding the body belt or body harness closed around the employee's body.

Carabiner: oblong ring snap hook (Europ.: Karabiner), erroneously called D-ring.

Competent Person: an individual knowledgeable of manufacturer's recommendations, instructions and manufactured components who is capable of identifying existing and predictable hazards in the proper selection, use and maintenance of fall protection.

Connecting means a device or lanyard used to connect the body support to the anchorage in such a way as to provide protected mobility for an elevated work task.

Connector means a device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabiner, or it may be an integral component of part of the system (such as a buckle or D-ring sewn into a body belt or body harness, or a snap-hook spliced or sewn to a lanyard or self-retracting lanyard).

Continuous Fall Protection: the design and use of a fall protection system such that no exposure to an elevated fall hazard occurs. This may require more than one fall protection system or a combination of prevention or protection measures.

Controlled access zone (CAZ) means an area in which certain work (e.g., overhand bricklaying) may take place without the use of guardrail systems, personal fall arrest systems, or safety net systems and access to the zone is controlled.

Controlled Descent: a descent automatically controlled at a constant rate of speed through a device that requires no manual manipulation or operation.

D-Ring: an attachment point(s) on the belt or harness for a device or lanyard. (Sometimes erroneously named for a carabiner snap hook)

Dangerous equipment means equipment (such as pickling or galvanizing tanks, degreasing units, machinery, electrical equipment, and other units) which, as a result of form or function, may be hazardous to employees who fall onto or into such equipment.

Deceleration device means any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.

Deceleration distance means the additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body belt or body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.

Double-Locking Snap Hook: see Locking Snap Hook.

Egress: a means of escape from a workstation; e.g., stairs, door or escape device. Not to be confused with NFPA101 means of egress.

Equivalent means alternative designs, materials, or methods to protect against a hazard which the employer can demonstrate will provide an equal or greater degree of safety for employees than the methods, materials or designs specified in the standard.

Failure means load refusal, breakage, or separation of component parts. Load refusal is a point where the ultimate strength is exceeded.

Fall Arrest System: a tested device and any necessary components that function together to arrest a free fall in such a way as to minimize the potential for compounding injury.

Fall Distance: the physical distance from the location of the worker's support prior to a fall and the place at which the person finally comes to a complete stop.
Fall Hazard: Any position from which an accidental fall may reasonably produce injury.

Fall Prevention: any means used to reasonably prevent exposure to an elevated fall hazard(s) such as floors, walls, guardrails and isolating an area.

Fall-Restraint System: a lanyard or device that is designed to restrain a worker in such a manner as to prevent a fall from occurring; e.g., a lineman's pole strap.

Free fall means the act of falling before a personal fall arrest system begins to apply force to arrest the fall.

Free fall distance means the vertical displacement of the fall arrest attachment point on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.

Full Body Harness: a design of single or multiple straps that can be secured around the body to which a lanyard or device can be attached. A full body harness is designed to distribute arresting and suspension forces over the buttocks, thighs, chest and shoulders used for industrial fall protection.

Guardrail system means a barrier erected to prevent employees from falling to lower levels.

Hazard: the potential to incur harm; an agent, energy or characteristic that can cause physical damage to personnel or property.

Hole means a gap or void 2 inches (5.1 cm) or more in its least dimension, in a floor, roof, or other walking/working surface.

Horizontal Lifeline: a rail, wire or synthetic cable that is installed in a horizontal plane and used for attachment of a worker's lanyard or lifeline device while moving horizontally; used to control dangerous pendulum-like swing falls.

Independent Lifeline: a lifeline that is not attached to the work surface; one lifeline per person.

Infeasible means that it is impossible to perform the construction work using a conventional fall protection system (i.e., guardrail system, safety net system, or personal fall arrest system) or that it is technologically impossible to use any one of these systems to provide fall protection.

Lanyard means a flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.

Leading edge means the edge of a floor, roof, or formwork for a floor or other walking/working surface (such as the deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed. A leading edge is considered to be an "unprotected side and edge" during periods when it is not actively and continuously under construction.

Lifeline means a component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Locking Snap Hook: a connecting snap hook that requires two separate forces to open the gate; one to deactivate the gate keeper and a second to depress and open the gate which automatically closes when released; used to minimize roll-out or accidental disengagement.

Low-slope roof means a roof having a slope less than or equal to 4 in 12 (vertical to horizontal).

Lower levels means those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.

Mechanical equipment means all motor or human propelled wheeled equipment used for roofing work, except wheelbarrows and mopcarts.

Opening means a gap or void 30 inches (76 cm) or more high and 18 inches (48 cm) or more wide, in a wall or partition, through which employees can fall to a lower Level.

Overhand bricklaying and related work means the process of laying bricks and masonry units such that the surface of the wall to be jointed is on the opposite side of the wall from the mason, requiring the mason to lean over the wall to complete the work. Related work includes mason tending and electrical installation incorporated into the brick wall during the overhand bricklaying process.

Personal fall arrest system means a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. As of January 1, 1998, the use of a body belt for fall arrest is prohibited.

Positioning Belt: a single or multiple strap that can be secured around the worker's body to hold the user in a work position; for example, a lineman's belt, a rebar belt, a window cleaner and a saddle belt.

Positioning device system means a body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.

Positioning System: a system employing a bosum chair or saddle belt used in conjunction with a loadline to descend to a work position.

Qualified Engineer: an individual with a degree from an accredited institution or professional certificate who is capable of design. analysis, evaluation, specification and system safety planning in the areas needed for fall hazard control.

Qualified Person: an individual with an appropriate degree from an accredited institution or professional certificate who has special knowledge, training or experience in the areas needed for fall hazard control.

Retracting Lifeline: a fall arrestor whose integral line extends as a worker moves downward and automatically retracts as the worker moves up toward the unit, eliminating slack. Retracting lifelines can have a centrifugal locking mechanism or alternatively centrifugal braking mechanism for controlled descent. (= block; European term)

Risk: the probability of a loss occurring.

Roll-Out: unintentional disengagement of a snap hook caused by the gate being depressed under torque or contact while twisting or turning; a particular concern with single-action snap hooks that do not have a locking gate keeper.

Rope grab means a deceleration device which travels on a lifeline and automatically. by friction. engages the lifeline and locks so as to arrest the fall of an employee A rope grab usually employs the principle of inertial locking, cam/level locking, or both.

Roof means the exterior surface on the top of a building. This does not include floors or formwork which, because a building has not been completed temporarily become the top surface of a building.

Roofing work means the hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work, but not including the construction of the roof deck.

Safety Belt: a generic term originally used for means of body support.

Safety Factor: the ratio of the calculated strength or deceleration of a load bearing member or material to the maximum load or deceleration the component is expected to sustain in actual use.

Safety-monitoring system means a safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.

Self-retracting lifeline/lanyard means a deceleration device containing a drumwound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.

Shock Absorbers: a component of a fall protection system that dissipates energy by creating or extending the deceleration distance.

Shock Absorbing Lanyard: a flexible line of webbing, cable or rope used to secure a body belt or harness to a lifeline or anchorage point that has an integral shock absorber.

Single-Action Snap Hook a connecting snap hook that requires a single force to open the gate which automatically closes when released.

Snaphook means a connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snaphooks are generally one of two types:

(1) The locking type with a self-closing, self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection; or
(2) The non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection. As of January 11 1998, the use of a non-locking snaphook as part of personal fall arrest systems and positioning device systems is prohibited.

Steep roof means a roof having a slope greater than 4 in 12 (vertical to horizontal).

Suspended Scaffold: a single point or multiple point work platform used for powered or unpowered access up and or down the side of a structure.

Swing Fall: a pendulum-like motion that can result from moving horizontally away from a fixed anchorage and falling. Swing falls generate the same amount of energy as a fall through the same distance vertically but with the additional hazard of colliding with an obstruction or the ground.

Tie-off: the act of a worker securing the end of a lanyard to an anchorage point. Note: The terms tied off, tying off (tieing off) are related to tie-off. An anchorage point is sometimes referred to as a tie-off point.

Toeboard means a low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.

Unprotected sides and edges means any side or edge (except at entrances to points of access) of a walking/working surface, e.g., floor, roof, ramp, or runway where there is no wall or guardrail system at least 39 inches (1.0 m) high.

Walking/working surface means any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel but not including ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.

Warning line system means a barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.

Work area means that portion of a walking/working surface where job duties are being performed.

Fall Protection Equipment Buyer's Guide

Cable Slide – Derrick – Angled Descent

This cable slide provides a quick means of escape from oil dericks or towers subject to fire hazards. It employs a wire cable permanently fitted from the structure to the ground at a suitable angle. The cable sliding device is provided with a seat or strap handle and can have a hand brake to permit the user to control the speed of descent. In other models, the descent can be controlled automatically. In an emergency, the worker slides safely away from the hazard area toward the ground.

Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Industrial Safety Co., 1390 Neubrecht Rd., Lima, OH 45801, 800-537-9721 FAX: 419-228-5034
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256

Emergency Descent Device with Rescue Cradle

These collapsible cradles are for use with emergency descent devices to provide rescue capability for injured workers in elevated workstations. They are easy to position around an injured worker even in cramped workspaces such as crane cabs. Recommended uses: for use in evacuating injured or incapacitated workers form elevated workstations. Where the victim has suffered broken bones or internal injuries, rigid stretchers should be used instead of collapsible cradles to avoid aggravating the injury.

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256

Emergency Descent Device – Limited Velocity

These devices provide workers with the means to escape form elevated work stations in the event of an emergency. Limited velocity type emergency descent devices have an inherent speed control that limits the rate of descent without any control form the user. This automatic feature protects workers form injury resulting from misuse of equipment in panic situations. These devices can provide for the escape of a single worker or for multiple escapes. One multiple-escape type incorporates a belt at each end of the descent cable. As one worker descends, the second belt is raised to provide continuous, individual escape capability. Another type uses a retractable cable design to return the belt for use by the next worker after the first worker reaches safety. Recommended uses: For emergency escape from elevated work stations such as overhead crane cabs or grain elevator workhouse. These units can also be used for the evacuation of unconscious workers in emergency situations.

Emergency Descent Device – Limited Velocity – One Person Escape

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Industrial Safety Co., 1390 Neubrecht Rd., Lima, OH 45801, 800-537-9721 FAX: 419-228-5034
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Emergency Descent Device – Limited Velocity – Multiperson Individual Escape

Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Emergency Descent Device – Limited Velocity – Retracting

Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Emergency Descent Device – Variable Speed Type

With variable speed emergency descent devices, the rate of descent is controlled by the worker looping the descent line around the device body. The weight of the worker, the number of loops and the worker's conscious actions all determine the rate of descent. When such devices are used for emergency descent, they must be set before initiating the escape, or be preset and used exclusively for the purpose of emergency descent. Recommended uses: To provide individual escape capability for workers in elevated workstations. Because these devices have no inherent speed limit, training is essential to ensure that workers can safely use the device in an emergency. Since the device typically travels down the descent line with the worker, they are suitable for individual escape situations only.

Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078

Body Support for Fall Arrest Equipment – Body Belts – ANSI Class I

Strong web (nylon or polyester) belts, 2 to 4 inches wide, are designed for use with fall arrest devices and should be used only where free falls will be limited to 2 feet or less. They are fitted with a single fixed or adjustable D-ring that is attached to a lanyard or lifeline grabbing device. The belt fastener can be a tongue buckle frame or friction buckle. Belts should be inspected before each use for cuts, signs of wear and security of rivets or stitching. Mildew-resistant

web belts are available for work in tropical or humid areas. Recommended uses: For use by workers on roofs, scaffolding, mountainsides or wherever there is a danger of slipping or falling. Also available are accessories such as a tool belt for slotted-pocket tool holders.

Antenna Products Corp., 101 S.S. 25th Ave., Mineral Wells, TX 76067, 940-325-3301 FAX: 940-325-0716
Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Industrial Safety Co., 1390 Neubrecht Rd., Lima, OH 45801, 800-537-9721 FAX: 419-228-5034
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
Trylon Manufacturing Co. Ltd., South Field Dr., P.O. Box 186, Elmira, ON, Canada N3B 2Z6, 519-669-8912
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256

Body Support for Fall Arrest Equipment – Body Harness – ANSI Class II

Nylon or web belts that have shoulder and leg straps can be used wherever there is a danger of serious injury from free falls. When the lifeline arrests the wearer's fall, the harness arrangement distributes the impact over the body. With the lifeline attached to a ring in the back of the belt, the harness best provides a practical means of raising or lowering the wearer in rescue work. Web belts that resist paint, mildew and acid are available. Color-coded harness straps help workers put on the harness more easily and properly. Recommended uses: Suitable for construction and maintenance work in tanks and confined spaces.

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Antenna Products Corp., 101 S.S. 25th Ave., Mineral Wells, TX 76067, 940-325-3301 FAX: 940-325-0716
Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Industrial Safety Co., 1390 Neubrecht Rd., Lima, OH 45801, 800-537-9721 FAX: 419-228-5034
Klein Tools, Inc., 7200 McCormick Blvd., P.O. Box599033, Chicago, IL 60659, 847-677-9500 FAX: 847-677-4476
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Mine Safety Appliances Co., P.O. Box 426, Pittsburgh, PA 15230, 800-MSA-2222 FAX: 800-967-0398
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SafetyWear, Div. Of Sullivan Brough, Inc., 1121 East Wallace St., Fort Wayne, IN 46803, 800-877-3555 FAX: 800-736-4997
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Start Rescue Training, Inc., P.O. Box 1574, Southampton, PA 18966, 877-357-8637 FAX: 215-364-8311
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
Trylon Manufacturing Co. Ltd., South Field Dr., P.O. Box 186, Elmira, ON, Canada N3B 2Z6, 519-669-8912
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205

Full-Body Harness – Belt and Strap System

This full-body harness and positioning belt is incorporated as a system to ensure the safety of personnel working on poles or other high height areas,

as well as to provide a means of positioning and carrying tools and equipment. The system consists of a full harness made of nylon-web with nylon webbed straps that are attached to the legs and shoulders and a leather and/or web belt that carries tools. The system provides two D-ring snaps located on either side and slightly forward of the hips and a centered D-ring that is attached midharness in the back for lanyard attachment. Special features include a quick connect-disconnect, two-piece interlocking buckle for both the chest and leg straps and removable lambswool shoulder straps for comfort. Recommended uses: For telecommunication and electric power field personnel.

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Antenna Products Corp., 101 S.S. 25th Ave., Mineral Wells, TX 76067, 940-325-3301 FAX: 940-325-0716
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Klein Tools, Inc., 7200 McCormick Blvd., P.O. Box599033, Chicago, IL 60659, 847-677-9500 FAX: 847-677-4476
Magid Glove & Safety Mfg. Co. LLC, 2060 N. Kolmar Ave. Chicago, IL 60639, 800-444-8030 FAX: 773-384-6677
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Mopeco Construction Products, 5600 W 88th Ave., Westminster, CO 80030, 800-521-5351 FAX: 303-657-2205
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
Pendergast Safety Equipment, 8400 Enterprise Ave., Philadelphia, PA 19153, 800-551-1901 FAX: 215-365-7527
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Body Support for Fall Arrest Equipment – Work Suit Body Harness

These overalls are designed for those working in confined spaces. They have a built-in harness system that combines overalls and harness belts. Made of synthetic fiber, they are moisture-proof and conform to the body to equally distribute the manholes, but are not designed to safeguard against free falls from great heights.

Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Start Rescue Training, Inc., P.O. Box 1574, Southampton, PA 18966, 877-357-8637 FAX: 215-364-8311
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Fall Arrest Equipment – Horizontal Lifelines

Horizontal lifelines are suspended from at least two fixed anchorage points on the same level. Both types of horizontal lifelines, cable and rail, serve to provide a continuous fixture point for the attachment of lanyards and/or retractable lifelines. Cable type lifelines can be single-span or multispan. Lifelines must be capable of supporting a 5,000 pound load per person or, except for construction applications, be engineered with a minimum safety factor of two. Recommended uses: To provide workers with a continuous overhead attachment point that allows for horizontal movement.

Cable Type Horizontal Lifeline

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327

Marshal Glove and Safety, 101 N. Elliott St., Evansville, IN 47711, 812-425-5167 FAX: 812-428-8791
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Rail Type Horizontal Lifeline

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Antenna Products Corp., 101 S.S. 25th Ave., Mineral Wells, TX 76067, 940-325-3301 FAX: 940-325-0716
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256

Integrated Vertical/Horizontal Cable Type Fall Arrest System

This fall arrest system provides workers with continuous protection and freedom of movement along the length of a lifeline without the need to unhook, thereby increasing both safety and worker productivity. Once secured with the system, users are able to work with both hands free, and there is not need to unhook when passing intermediate support points. The special fastener is available in overhead, horizontal, sloping and vertical configurations depending on the installation. Some manufacturers offer complete project assistance and will take responsibility for the design, installation, testing and certification of the system. Recommended uses: For continuous fall arrest protection and freedom of movement in applications such as pipe bridges, tanker truck bays, overhead cranes, ladders and roof-top maintenance.

Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
SafetyWear, Div. Of Sullivan Brough, Inc., 1121 East Wallace St., Fort Wayne, IN 46803, 800-877-3555 FAX: 800-736-4997
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Shock Absorbing Lanyards

Shock-absorbing lanyards serve to mitigate a portion fo the shock of a fall by absorbing some of the energy through the use of web-tearing or stretch fiber construction. These lanyards contribute to the overall safety and effectiveness of fall arrest systems that employ lanyard conncections. Recommended uses: To minimize injury in the event of a fall by reducing fall arrest forces on the body.

Shock Absorbing Lanyards – Adjustable Length

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
CM®, A Columbus McKinnon Company, 140 John James Audubon Pkwy., Amherst, NY 14228, 800-888-0985 FAX: 716-689-5644
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256

Shock Absorbing Lanyards – Rope

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Industrial Safety Co., 1390 Neubrecht Rd., Lima, OH 45801, 800-537-9721 FAX: 419-228-5034
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Shock Absorbing Lanyards – Steel Cable

Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256

Shock Absorbing Lanyards – Web

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954

Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
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North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Lifelines and Lanyards – Retracting

This self-contained fall arrest device is attached to a fixed anchorage or horizontal lifeline above the work area. A lifeline or lanyard extends from the device and is connected to the user's safety belt. As the worker moves away from the anchorage, the rope feeds out of the device and retracts as the worker moves closer. Constant tension is maintained up to the maximum extension, which varies from 6 to 300 feet. In the event of a fall, a centrifugal locking mechanism is activated and results in a short free fall or controlled descent. Recommended uses: Retracting lifelines and lanyards provide good protection on sloping roofs and other angular structures because the design keeps the rope or webbing taut and away from the work area. They can also be used in confined space and tank entry applications, and in warehouse environments for order-picker and in-plant truck driver fall protection.

Retracting Lanyard – Fall Arrest Device

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
CM®, A Columbus McKinnon Company, 140 John James Audubon Pkwy., Amherst, NY 14228, 800-888-0985 FAX: 716-689-5644
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Klein Tools, Inc., 7200 McCormick Blvd., P.O. Box599033, Chicago, IL 60659, 847-677-9500 FAX: 847-677-4476
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SafetyWear, Div. Of Sullivan Brough, Inc., 1121 East Wallace St., Fort Wayne, IN 46803, 800-877-3555 FAX: 800-736-4997
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Start Rescue Training, Inc., P.O. Box 1574, Southampton, PA 18966, 877-357-8637 FAX: 215-364-8311
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Retracting Lifeline – Fall Arrest Device

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
CM®, A Columbus McKinnon Company, 140 John James Audubon Pkwy., Amherst, NY 14228, 800-888-0985 FAX: 716-689-5644
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751

Klein Tools, Inc., 7200 McCormick Blvd., P.O. Box599033, Chicago, IL 60659, 847-677-9500 FAX: 847-677-4476
Marshal Glove and Safety, 101 N. Elliott St., Evansville, IN 47711, 812-425-5167 FAX: 812-428-8791
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
Pendergast Safety Equipment, 8400 Enterprise Ave., Philadelphia, PA 19153, 800-551-1901 FAX: 215-365-7527
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Start Rescue Training, Inc., P.O. Box 1574, Southampton, PA 18966, 877-357-8637 FAX: 215-364-8311
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Rope Grab and Vertical Lifelines – Fall Protection

A rope grab is a deceleration device that travels on a vertical lifeline attached to a secure overhead anchorage. In the event of a fall, the rope grab automatically applies friction to engage the lifeline to help absorb the force of the fall. It then locks to arrest the fall. Such devices usually operate on inertial locking or cam/lever locking principles, or both. The rope and anchorage must be able to support a minimum deadweight of 5,400 pounds. The grabs can travel up and down the rope freely, and activate only to arrest a fall (mobile rope grabs), or be moved up and down the rope by the worker (manual rope grabs). Both cable and rope lifelines are available, and rope grab device must be approved by the manufacturer for use with the specific lifeline chosen. Recommended uses: Wire cable lifelines are rigid and can magnify the intensity of the shock of a fall. As a result, they should be used with shock-absorbing devices. Ropes made of synthetic fibers should be chosen with the application in mind because of varying resistances to chemicals and environmental factors.

Rope Grab with Cable Type Vertical Lifeline – Fall Protection

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Rope Grab with Rope Type Vertical Lifeline – Fall Protection

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Industrial Safety Co., 1390 Neubrecht Rd., Lima, OH 45801, 800-537-9721 FAX: 419-228-5034
Klein Tools, Inc., 7200 McCormick Blvd., P.O. Box599033, Chicago, IL 60659, 847-677-9500 FAX: 847-677-4476
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564

Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Barrier Nets

Barrier nets are installed vertically around construction sites and work stations both to prevent debris from falling on workers or the general public and to serve as passive fall prevention equipment for the workers themselves. When these nets are properly installed from a suitable top rail and secured to deck level, they can also satisfy OSHA's requirements for midrail and toeboard protection. Recommended uses: In addition to preventing construction debris and tools from falling from an elevated worksite, properly installed barrier nets provide passive, positive fall protection where either large numbers of workers are exposed to fall hazards of 25 feet or more, or where large elevated work areas need to be protected.

DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
PearlWeave Safety Netting Corp., 606 West 131 Street, New York, NY 10027, 212-283-0505 FAX: 212-862-8951
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256

Debris Nets

Debris nets are installed beneath elevated construction sites to catch falling construction debris, tools, etc. The mesh strength and size are determined by the type of debris that is likely to fall but, typically, net sizes range form ¼ to ¾ inch mesh. Where nets are to be used to protect workers as well as catch debris, personnel nets can be installed in conjunction with debris nets. In this case, the personnel net must be cleared of debris regularly to prevent any injury to a worker who may fall into it. Recommended uses: To protect workers and the general public from injury from falling tools or debris at elevated construction sites. They can also be used as transfer, barrier and cargo hold-down nets, floor opening covers, etc.

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
PearlWeave Safety Netting Corp., 606 West 131 Street, New York, NY 10027, 212-283-0505 FAX: 212-862-8951

Fixed Ladder Cages

These permanently fitted basket guards enclose climbers as they ascend fixed ladders. The cages are semicircular in shape and are attached to the side rails. Recommended used: For use with fixed ladders on towers, chemical plants, silos, etc.

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Cotterman Company, 130 Seltzer Road, P.O. Box 168, Croswell, MI 48422, 800-552-3337 FAX: 810-679-4510
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205

Gate System – Automatic Open and Close

This system consists of a pair of interconnected overhead gates attached by cables and pulleys so that one gate remains closed while the other is open. When one gate is raised, the other lowers automatically to provide protection against accidents and material damage. This system is designed for safe access to mezzanine and platform storage areas.

HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller Edge, Inc., P.O. Box 159, West Grove, PA 19390, 800-220-3343 FAX: 610-869-4423

Personnel Nets

Typically used on bridge work and at building construction sites, safety nets can provide passive fall protection to large numbers of workers at heights of 25 feet or more. Nets used for fall protection must meet ANSI and OSHA personnel net requirements

for manufacturing, testing and installation. The maximum mesh opening permitted for personnel nets is 6 by 6 inches. Recommended uses: For protection of workers involved in construction and maintenance of buildings, bridges, platforms and power lines.

Personnel Nets – Manila Rope

HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
PearlWeave Safety Netting Corp., 606 West 131 Street, New York, NY 10027, 212-283-0505 FAX: 212-862-8951

Personnel Nets – Synthetic Fiber Webbing or Rope

DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
PearlWeave Safety Netting Corp., 606 West 131 Street, New York, NY 10027, 212-283-0505 FAX: 212-862-8951

Railing – Metal

Durable metal railings have wide applications for general industry such as on the catwalks of chemical storage tanks, on roof edges, in power and sewage plants, along tunnels, garage ramps and docks, in warehouses and vaults, around dangerous machinery, on stairways, etc. Railings with fittings secured by set screws require no welding or thread cutting to assemble. Portable types are available for temporary installations. Some railing panels can be filled in with expanded metal or wire mesh. All railings must meet OSHA standards for height, strength, etc.

Fall Protection Systems, P.O. Box 687, Londonderry, VT 05148, 800-582-0533 FAX: 802-824-6403
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Marshal Glove and Safety, 101 N. Elliott St., Evansville, IN 47711, 812-425-5167 FAX: 812-428-8791
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
PearlWeave Safety Netting Corp., 606 West 131 Street, New York, NY 10027, 212-283-0505 FAX: 212-862-8951
Penco Products, Inc., 99 Brower Avenue, P.O. Box 378, Oaks, PA 19456, 800-562-1000 FAX: 610-666-7561
Plasteco Inc., 8535 Market St., P.O. Box 24158, Houston, TX 77229, 800-231-6117 FAX: 713-453-8372
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205
Vestil Mfg. Co., P.O. Box 507, Angola, IN 46703, 800-348-0868 FAX: 800-526-3133
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Rooftop Walkway System

These systems provide access to rooftop equipment and fixtures and safeguard workers against slipping while protecting the roof against damage. The walkway systems are available as factory assembled systems or assemble-on-site components and can be customized to meet specific roofing requirements. The systems can be run perpendicularly, diagonally or parallel to the roof's standing seams.

Fall Protection Systems, P.O. Box 687, Londonderry, VT 05148, 800-582-0533 FAX: 802-824-6403
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Skylight Screen – Roof Openings Guarding

These screens protect workers from falls through roof openings, particularly rooftop skylights. Consisting of aluminum side rails and a galvanized wire mesh screen, the screens slope over the top of a roof opening or skylight and act as a physical barrier to prevent falls. The screens withstand loads of at least 200 pounds and can be installed without special tools or training. Recommended uses: To act as physical barriers and prevent falls through roofs and skylights.

Fall Protection Systems, P.O. Box 687, Londonderry, VT 05148, 800-582-0533 FAX: 802-824-6403
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751

Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Plasteco Inc., 8535 Market St., P.O. Box 24158, Houston, TX 77229, 800-231-6117 FAX: 713-453-8372
Tru-Fast Corporation, 02105 Williams County Road, 12-C, Bryan, OH 43506, 800-443-9602 FAX: 419-636-1784

Fall Protection Training

Since falls are a major source of injury in industry, instruction in fall protection is an important part of employee training. General presentations cover the proper construction, maintenance and use of climbing apparatus. Materials instruct in the proper positioning and climbing of ladders and detail safety factors in the use of scaffolding including flooring, fittings and guardrails. Many instructional materials depict ways in which carelessness and unsafe acts can lead to falls. Recommended uses: For use in all industrial safety programs and particularly to train maintenance, construction and warehousing employees.

Audiovisual Programs – Fall Protection

Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Clark-McKibben Safety Prod. Inc., 2001 Hampton Rd., P.O. Box 3244, Erie, PA 16508, 800-525-9967 FAX: 800-488-3434
Clement Communications, Inc., Concord Industrial Park, Concordville, PA 19331, 800-345-8101 FAX: 610-358-5565
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Dynamic Scientific Controls, Inc., 306 Country Club Drive, Wilmington, DE 19803, 800-DSC-7775 FAX: 302-571-0756
J.J. Keller & Associates, Inc., 3003 W. Breezewood Lane, Neenah, WI 54957, 800-327-6868 FAX: 800-727-7516
Louisville Ladder, 1163 Algonquin Parkway, Louisville, KY 40208, 502-635-9380 FAX: 502-635-9304
Media Resources Inc., 9012 NW Holly Rd., #B, Bremerton, WA 98312, 360-373-1000 FAX: 360-830-3380
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
O'Donnell Organization, 1100 16th Street North, St. Petersburg, FL 33705, 800-731-4499 FAX: 727-895-3326
Safety Short Productions, 2960 N. 23rd Street, La Porte, TX 77571, 800-458-2236 FAX: 281-470-8653
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256

Cassette Tapes – Fall Protection

COMCO Safety Consulting, Inc., 2365 E. Sepulveda Blvd., Long Beach, CA 90810-1944, 562-981-5335 FAX: 562-981-5330
Dynamic Scientific Controls, Inc., 306 Country Club Drive, Wilmington, DE 19803, 800-DSC-7775 FAX: 302-571-0756
Louisville Ladder, 1163 Algonquin Parkway, Louisville, KY 40208, 502-635-9380 FAX: 502-635-9304

Computer Programs – Fall Protection

Dynamic Scientific Controls, Inc., 306 Country Club Drive, Wilmington, DE 19803, 800-DSC-7775 FAX: 302-571-0756

Interactive Computer-Based Training – Fall Protection

COMCO Safety Consulting, Inc., 2365 E. Sepulveda Blvd., Long Beach, CA 90810-1944, 562-981-5335 FAX: 562-981-5330
Dynamic Scientific Controls, Inc., 306 Country Club Drive, Wilmington, DE 19803, 800-DSC-7775 FAX: 302-571-0756

Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
O'Donnell Organization, 1100 16th Street North, St. Petersburg, FL 33705, 800-731-4499 FAX: 727-895-3326

Literature and Training Manuals – Fall Protection

Clark-McKibben Safety Prod. Inc., 2001 Hampton Rd., P.O. Box 3244, Erie, PA 16508, 800-525-9967 FAX: 800-488-3434
COMCO Safety Consulting, Inc., 2365 E. Sepulveda Blvd., Long Beach, CA 90810-1944, 562-981-5335 FAX: 562-981-5330
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Dynamic Scientific Controls, Inc., 306 Country Club Drive, Wilmington, DE 19803, 800-DSC-7775 FAX: 302-571-0756
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
International Society for Fall Protection, 2971 Old Homestead Rd., R.R. #2, Keswick, ON, Canada L4P 3E9, 905-476-8826 FAX: 905-476-8271
J.J. Keller & Associates, Inc., 3003 W. Breezewood Lane, Neenah, WI 54957, 800-327-6868 FAX: 800-727-7516
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Louisville Ladder, 1163 Algonquin Parkway, Louisville, KY 40208, 502-635-9380 FAX: 502-635-9304
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
MPC Promotions, 2026 Shepherdsville Rd., Louisville, KY 40218, 800-331-0989 FAX: 502-451-5075
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
O'Donnell Organization, 1100 16th Street North, St. Petersburg, FL 33705, 800-731-4499 FAX: 727-895-3326
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Seton Identification Products, 20 Thompson Rd., Branford, CT 06405, 800-243-6624 FAX: 800-345-7819
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Slides, Filmstrips and Films – Fall Protection

Dynamic Scientific Controls, Inc., 306 Country Club Drive, Wilmington, DE 19803, 800-DSC-7775 FAX: 302-571-0756
Fall Protection Systems, P.O. Box 687, Londonderry, VT 05148, 800-582-0533 FAX: 802-824-6403
Louisville Ladder, 1163 Algonquin Parkway, Louisville, KY 40208, 502-635-9380 FAX: 502-635-9304
Media Resources Inc., 9012 NW Holly Rd., #B, Bremerton, WA 98312, 360-373-1000 FAX: 360-830-3380
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564

Training Courses – Fall Protection

Clark-McKibben Safety Prod. Inc., 2001 Hampton Rd., P.O. Box 3244, Erie, PA 16508, 800-525-9967 FAX: 800-488-3434
COMCO Safety Consulting, Inc., 2365 E. Sepulveda Blvd., Long Beach, CA 90810-1944, 562-981-5335 FAX: 562-981-5330
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Department of Environmental Health, University of Cincinnati, P.O. Box 670056, Cincinnati, OH 45267, 800-207-9399 FAX: 513-558-1756
Dynamic Scientific Controls, Inc., 306 Country Club Drive, Wilmington, DE 19803, 800-DSC-7775 FAX: 302-571-0756
Haz Mat Training & Research Institute, HMTRI, 6301 Kirkwood Blvd. SW, Cedar Rapids, IA 52404, 319-398-5893 FAX: 319-398-5894
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
J.J. Keller & Associates, Inc., 3003 W. Breezewood Lane, Neenah, WI 54957, 800-327-6868 FAX: 800-727-7516
Louisville Ladder, 1163 Algonquin Parkway, Louisville, KY 40208, 502-635-9380 FAX: 502-635-9304
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
ReiTech Corporation, 11965 12th Ave. So., Ste. 200, Burnsville, MN 55337, 800-385-6161 FAX: 612-895-8010
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564

Wristlets

Wristlets attached to a yoke are designed for use in narrow opening tank work or in glass or other easily damaged tanks. Workers can be lowered safely, and the device functions so that an injured or unconscious person can be pulled through a narrow opening without damaging the shoulder region. One model has soft leather wristlets with a manila rope yoke. Another has a yoke of synthetic fiber rope with webbing wristlets of synthetic fabric that are self-adjusting to size.

Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
Spectrum Quality Products, Inc., 14422 S. San Pedro St., Gardena, CA 90248, 800-772-8786 FAX: 800-525-2299
Start Rescue Training, Inc., P.O. Box 1574, Southampton, PA 18966, 877-357-8637 FAX: 215-364-8311
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256

Hardware – Anchorage Brackets and Anchor Bolts

Anchorage brackets provide a secure point of attachment for lifelines, lanyards or deceleration devices and must be independent of the attachment for lines supporting or suspending the worker. All anchorages, including single- and double-head anchors, must be capable of supporting at least 5,000 pounds for each employee attached to the anchorage. For exterior maintenance work, the loadline that supports the worker's weight must be shorter than the lifeline intended to arrest a fall. Shock absorbers used with the lifeline help reduce the possibility of the anchor failing in use.

Anchorage Brackets – Lifelines and Loadlines

Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327

Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Anchor Bolt Assemblies – Lifelines and Loadlines

Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Anchor Straps (Boom Belts) – Bucket Truck

These belts are designed to provide a lifeline anchorage to the boom of the bucket by wrapping around the boom. The worker's body belt is then attached to the boom belt D-ring by means of a lanyard and snap hook. Recommended uses: For use on aerial bucket equipment of the "cherry-picker" type.

Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Anchor – Window Cleaner

Window cleaning safety depends as much on the anchors to which the cleaner's belt is hooked as on the belt itself. Since faults or deterioration in the anchor may not be readily visible, the anchoring devices should be selected and installed with great care. Anchors can be made of brass, bronze or stainless steel and are designed for specific installations such as in wood, hollow metal, solid metal and masonry. They should be subjected to rigid tests and periodic examination. Local regulations should be consulted before installation. Anchors should meet the requirements of ANSI A39.1.

Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342

Snap Hook – Carabiner and Lanyard Type

Snap hooks are connectors that connect components of fall and climbing protection systems to each other. Carabiner type snap hooks are independent pieces of hardware, while lanyard type snap hooks are spliced

or sewn to a lanyard and are an integral part of the fall protection equipment. Both are available in locking or nonlocking designs. Snap hooks should be chosen with the entire fall protection or positioning system accidentally depressing the snap hook keeper, thereby unintentionally disengaging it. Locking type snap hooks require a deliberate unlocking action before pressing the keeper open and are therefore less susceptible to roll-out or accidental disengagement.

Snap Hook – Carabiner Type – Locking

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Snap Hook – Carabiner – Nonlocking

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Snap Hook – Lanyard Type – Locking

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Snap Hook – Lanyard Type – Nonlocking

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Snap Hook – Scaffold Type

These special locking snap hooks are part of the equipment used by industrial and construction workers and others who work on ladders. The hook is located on the belt, near the buckle. It can be

snapped easily over the rung of a ladder or rebar structure and allows the worker considerable flexibility in movement while providing fall protection. Recommended uses: To protect workers from serious injury resulting from ladder or scaffold accidents or other hazards where the free fall potential is extremely limited.

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342

Connectors – Rail Trolleys

These connectors are a component of horizontal and vertical rail type fall arrest systems. Connectors should be engineered as part of the fall arrest system. Use of incompatible connectors could result in system failure under load.

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564

Connectors – Swivel Pulleys

These hardware components connect retracting lifelines or lanyards to horizontal lifeline systems to permit freedom of movement for the worker. The worker is able to twist, bend, etc., without being restricted by the lanyard attachment to the lifeline.

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078

Tripods

Adjustable tripods can serve multiple purposes in conjunction with fall protection equipment. Tripods can be used for fall protection training to allow workers to become familiar with fall arrest equipment in a controlled situation. Tripods can also be used as an overhead anchorage point for lifelines used in confined space entry and retrieval operations. Winches and communications systems can be incorporated as integral elements of the tripod unit.

Tripod – Confined Space Entry and Retrieval

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327

Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Mine Safety Appliances Co., P.O. Box 426, Pittsburgh, PA 15230, 800-MSA-2222 FAX: 800-967-0398
Mopeco Construction Products, 5600 W 88th Ave., Westminster, CO 80030, 800-521-5351 FAX: 303-657-2205
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SafetyWear, Div. Of Sullivan Brough, Inc., 1121 East Wallace St., Fort Wayne, IN 46803, 800-877-3555 FAX: 800-736-4997
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Start Rescue Training, Inc., P.O. Box 1574, Southampton, PA 18966, 877-357-8637 FAX: 215-364-8311
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Tripod Anchorage – Fall Protection Training

Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
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North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564

Fixed Ladder Safety Device – Climbing Protection – Cable Type

Cable type fixed ladder climbing safety systems incorporate a steel cable attached to fittings at the top and bottom of the ladder. Cable guides installed at intervals keep the cable taut for the climber. Sliding devices or sleeves attached to the worker's body belt hook to the cable and move freely up and down as the worker ascends and descends the ladder. In the event of a fall, a cam feature in the device grips the cable to arrest the fall. Such devices can be captive or removable, depending upon work requirements. Recommended uses: Cable type systems are suitable for climbing protection on illumination or communication poles and under ground shafts. While installation costs are lower for cable systems than for rail systems, a rigorous maintenance program is required to assure continuing itegrity6 of the cable and its upper fixture point.

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205
Trylon Manufacturing Co. Ltd., 21 South Field Dr., P.O. Box 186, Elmira, ON, Canada N3B 2Z6, 519-669-5421 FAX: 519-669-8912

Fixed Ladder Safety Device – Climbing Protection – Rail Type

Fixed ladders can be fitted with a permanent metal rail along the rungs or side rail to provide climbing protection for the entire length of the ladder. A ladder sleeve device attaches to the climber's body belt and moves freely along the rail as the worker ascends or descends. When a fall begins, the sleeve locks onto the carrier to arrest the fall immediately. Recommended uses: As safety devices for applications involving tall ladders, such as those on towers and stacks.

Fixed Ladder Safety Device – Climbing Protection – Central Rail Type

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Antenna Products Corp., 101 S.S. 25th Ave., Mineral Wells, TX 76067, 940-325-3301 FAX: 940-325-0716
Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205
Trylon Manufacturing Co. Ltd., 21 South Field Dr., P.O. Box 186, Elmira, ON, Canada N3B 2Z6, 519-669-5421 FAX: 519-669-8912
TS Products, Inc., 136 Whittington Course, St. Charles, IL 60174, 630-377-1442 FAX: 630-3778957
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Fixed Ladder Safety Device – Climbing Protection – Siderail Type

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Jomy Safety Products, Inc., 6255 Longbow Dr., Boulder, CO 80301, 800-255-2591 FAX: 303-527-2800
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
TS Products, Inc., 136 Whittington Course, St. Charles, IL 60174, 630-377-1442 FAX: 630-377-8957

Ladder Rail Extension – Below-Level Climbs

Exposed manholes and other covered, below-level climbs where there is no above ground support present problems of safe entry and descent. Removable extensions for rail type fall prevention systems compatibly installed on fixed ladders provide means for the climber to attach securely on the surface before stepping down. Recommend uses: For use in below-level climbing applications such as manholes, tank interiors, hatches and silos.

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Antenna Products Corp., 101 S.S. 25th Ave., Mineral Wells, TX 76067, 940-325-3301 FAX: 940-325-0716
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205
TS Products, Inc., 136 Whittington Course, St. Charles, IL 60174, 630-377-1442 FAX: 630-3778957

Telescoping Post – Hand-Hold Extension – Access Hatch Ladders

This safety post is an extension device that attaches permanently to a fixed ladder leading to an access hatch or pit door. The person using the ladder raises the safety post to provide a hand-hold when climbing up or down, or when the ladder rungs end. The post is adjustable for all ladder types and is available in a model for normal conditions and in one that contains an alloy spring for use in corrosive atmospheres.

The Bilco Company, P.O. Box 1203, New Haven, CT 06505, 203-934-6363 FAX: 203-933-8478
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591

SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Fall Arrestor System – Personal

This package provides a complete system to meet fall arrest and fall restraint methods of fall protection. The package includes a lifeline/rope grab knot, a body harness and lanyard, carabiners and a training and instruction manual. All of these products fit into a carry bag. Recommended uses: For use by construction, mining, forestry, marine and maintenance workers to provide protection from falls.

Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
Trylon Manufacturing Co. Ltd., 21 South Field Dr., P.O. Box 186, Elmira, ON, Canada N3B 2Z6, 519-669-5421 FAX: 519-669-8912
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Lifelines and Belts (Meets Reg. of NFPA-1983 Rescue Standard)

Equipment meeting the requirements of the NFPA-1983 Standard on Fire Service Life Safety Rope, Harnesses and Hardware is designed specifically to meet the needs of the fire service. Manufacturers of such equipment are required to furnish upon request a certificate of compliance along with substantiating data from an independent testing laboratory. They must also make available inspection and maintenance procedures and retirement criteria.

Hardware – Fire Service

DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Lifelines – Fire Service

DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Rappelling Equipment – Fire Service

DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078

Rescue Seats – Fire Service

Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591

Mezzanine Safety Gate

This gate system is designed to prevent falls and other accidents associated with mezzanine loading areas. The gate is permanently anchored at the ledge and is designed as a workflow station that offers safety while loading, off-loading or working on a pallet in place. The unit consists of a front and rear gate plus two fixed side panels, all supported by a beam frame. The front and back gates interconnect with cables and are counterbalanced by a pulley system and torque shaft. When one gate is up, the other is down.

HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751

Protective Railing System

This steel railing is easily installed by locking railing section into mounting posts with base plates that hold firm on any surface. This construction allows the self-supporting guardrails to be quickly dismantled and relocated if desired, and also allows for expansion. Recommended uses: For use in protecting machinery, racks, shelves, offices, material supplies, robotic equipment and mezzanines from forklifts, tractors and other in-plant vehicles. It is also for use in defining pedestrian aisle ways and conveyor runs.

Fall Protection Systems, P.O. Box 687, Londonderry, VT 05148, 800-582-0533 FAX: 802-824-6403
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
PearlWeave Safety Netting Corp., 606 West 131 Street, New York, NY 10027, 212-283-0505 FAX: 212-862-8951
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205
Testil Mfg. Co., P.O. Box 507, Angola, IN 46703, 800-348-0868 FAX: 800-526-3133

Railing – Fiberglass

These strong, lightweight railings are particularly suited to corrosive environments such as in chemical companies, maritime operations, water purification and sewage treatment plants and metallurgical plating departments. Resistant to numerous acids, salts and chemical compounds, these railings are electrically nonconductive and fire retardant. These railings also meet applicable OSHA standards. Recommended uses: For safety in stairway, ramp, platform, machinery guard and bridge systems.

HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
PearlWeave Safety Netting Corp., 606 West 131 Street, New York, NY 10027, 212-283-0505 FAX: 212-862-8951

Railing – Retractable

This protective railing is for work platforms, open-sides floors, floor openings and runways where toe boards are not required. It also meets OSHA requirements for truck and rail loading dock protection. A retractable barrier provides highly visible rails at 42 inches and 21 inches from the deck. Units can be used in various combinations to achieve different lengths of coverage.

HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
PearlWeave Safety Netting Corp., 606 West 131 Street, New York, NY 10027, 212-283-0505 FAX: 212-862-8951

Railing – Temporary – Open Grid – Floor Mounted

This temporary railing system clamps onto open grid floors to protect workers from falling off unfinished construction elevations. The system can be used with guardrails or static cable lines. Recommended uses: To reduce the hazards presented by unfinished flooring, open walls and platforms.

Fall Protection Systems, P.O. Box 687, Londonderry, VT 05148, 800-582-0533 FAX: 802-824-6403
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
PearlWeave Safety Netting Corp., 606 West 131 Street, New York, NY 10027, 212-283-0505 FAX: 212-862-8951

Railing Couplings – Unthreaded

These unthreaded fittings are for the easy joining of pipes to make racks, railings, etc. The fittings are slipped onto the pipe ends and secured with set screws. Straight couplings, elbow, socket Tee, Crossover, four-socket cross, swivel, base flange, and numerous other designs are available. Recommended uses: For quick erection of pipe railings, racks, machine guards, catwalks, temporary buildings, etc.

HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591

Swing Gate – Floor Opening Guard

These are prefabricated swinging gates to permit access to ladders and platforms. Some types include a metal frame gate, self-closing spring and adjustment bolts for attaching to handrails, pipe flatbar and other types of posts. Other models feature all-plastic construction, except attachment hardware, suitable for outdoor elements, and an automatic gravity-closing design. Recommended uses: For use on

towers, platforms and ladder cage entrances.

FabEnCo, Inc., 2012 Karbach, Houston, TX 77092, 713-686-6620 FAX: 713-688-8031
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller Edge, Inc., P.O. Box 159, West Grove, PA 19390, 800-220-3343 FAX: 610-869-4423

Work Positioning Equipment – Boatswain's Chairs

Boatswain's, or bosun's, chairs are single-point adjustable suspension harnesses used for single worker positioning in both above and below ground applications. Boatswain's chairs are designed to comfortably support the worker's weight as a static load during vertical movement. They are not intended for use as fall prevention devices, but can be used for the retrieval or rescue of injured workers. An attached body strap prevents the worker from slipping or falling out. Recommended uses: For marine uses, and for painter, window cleaners, construction workers and those doing rescue operations or working in otherwise inaccessible places.

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Klein Tools, Inc., 7200 McCormick Blvd., P.O. Box599033, Chicago, IL 60659, 847-677-9500 FAX: 847-677-4476
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
Start Rescue Training, Inc., P.O. Box 1574, Southampton, PA 18966, 877-357-8637 FAX: 215-364-8311
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256

Work Positioning Equipment – Body Belts – ANSI Class IV

These ANSI Class IV suspension belts are designed as independent work supports with simple or compound strap designs and are used primarily to suspend or support a worker. If the body belt is to form part of a fall protection system, it must be used in conjunction with a suitable lanyard positioning device attached to a secure anchorage. Body belts used for work positioning should be designed with a wide back pad and D-ring attachments on each side of the belt to provide adequate support to workers as they lean back against the belt. Belts fabricated for specific applications are available. Recommended uses: For positioning workers in general construction and maintenance work.

Antenna Products Corp., 101 S.S. 25th Ave., Mineral Wells, TX 76067, 940-325-3301 FAX: 940-325-0716
Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256

Bridge and Steelworker Belts

Nylon web safety belts are designed to break the fall of workers in such jobs as bridge or structural steel construction. A safety rope can be looped directly into one side of the belt, or the belt can have at least

one D-ring to which a lifeline can be attached. Such belts can include wrench carriers or other attachments for tools. A two-section model divides the stress between the chest and waist.

DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591

Car Dropper Belt

These belts, which prevent the wearer from falling more than a few feet from the working area, provide bodily safety for workers who encounter insecure footing conditions in switching and dropping railroad cars, working on locomotives, boilers, etc. A short rope lanyard looped through a D-ring permits the wearer to attach the belt to a nearby structure. A shoulder harness can be included for greater comfort and safety. A variation of the car dropper belt, a miner's belt, is available for protection of workers engaged in switching and dropping railroad cars in underground mining operations.

Car Dropper Belt

DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898

Miner's Belt

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898

Chemical and Oil Worker Belt

Leather and fabric web belts deteriorate rapidly when in contact with fumes, smoke or water contaminated by acids. This web belt is coated with plastic and rubber materials that are impervious to oils and acids to prevent deterioration. Treated harness and spark-proof hardware are also available. Recommended uses: For chemical and oil industry workers who require fall protection.

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591

Chest-Waist Harness – Work Positioning, Retrieval and Restraint – ANSI Class II

Chest-waist harnesses should be used only when no vertical free fall hazard is anticipated and primarily for restraint, positioning or retrieval. The harness is designed to distribute the force of the impact between the chest and the waist in the event of a fall. Nylon web shoulder straps, with slide buckles for size adjustment, attach to belts around both the chest and waist. In case of an accident, the harness maintains inert bodies in a perpendicular position for rapid retrieval to safety, even through small openings. Recommended uses: For workers in precarious places such as gas and oil tanks, manholes, pits and boilers where there are only limited fall hazards.

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Antenna Products Corp., 101 S.S. 25th Ave., Mineral Wells, TX 76067, 940-325-3301 FAX: 940-325-0716
Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372

HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Klein Tools, Inc., 7200 McCormick Blvd., P.O. Box599033, Chicago, IL 60659, 847-677-9500 FAX: 847-677-4476
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Start Rescue Training, Inc., P.O. Box 1574, Southampton, PA 18966, 877-357-8637 FAX: 215-364-8311
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Lineman's Belt and Strap

This nylon, leather or web belt is designed both to assure the safety when working on telephone or electric poles and to provide a means of carrying the tools needed during work. It generally consists of a wide band to support the back, tapering to a narrower width in front. The safety strap, encircling the pole, snaps onto two D-rings slightly forward of the hips. Loops of narrow strap held by rivets around the back carry the tools. Special tool pockets and tape holders can also be included.

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898

Saddle Belts

Similar to a boatswain's chair, a saddle belt is used primarily in the oil industry as part of a climbing system to raise workers to the top of an oil platform. It can, for example, be used with a counterweight system to support workers as they are raised to the top of an oil rig tower.

Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078

Tree Trimmer Belts

This cotton or nylon web or nylon/leather belt is particularly adapted to the needs of forestry workers. The belt has a 10 foot rope spliced to on D-ring. A snap hook on the other end of the rope can be secured to a second D-ring. Attachments included an axehead scabbard. The belt and safety line are designed to prevent lumber people from falling to the ground, while permitting them to work and move safely among the branches of the trees.

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898

Window Cleaner Belt and Strap

This strong nylon or polyester web belt gives window cleaners both freedom of movement and security when attached in an approved manner. The waist belt is generally at least 3 inches wide, with safety straps riveted at the back. The safety straps are long enough to fit 30 to 54 inch windows and terminate in special hooks for the anchors on each side of the window. Belts are available with shoulder straps, safety straps for wider windows and stirrup type devices for buildings not equipped with window cleaning anchors. They should meet the requirements of ANSI A39.1.

AA Ladder & Supply Corp., 2305 Rhode Island Avenue, Washington, DC 20018, 202-526-8800 FAX: 202-529-6289
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078

Work Positioning Equipment – Lanyards

Lanyards provide the lifeline connection between a worker's safety belt or harness and a fixed anchorage point of a lifeline while at the same time allowing horizontal freedom of movement on-the-job. Lanyards are available in manila or synthetic fiber rope, galvanized or stainless steel cable, vinyl covered wire rope and webbing of synthetic fabrics that can be latex impregnated. Some lanyards are available with adjustable lengths. The lanyard should be kept as short as work conditions permit and must not allow a free fall of more that 6 feet. Recommended uses: For use by construction, mining, forestry, marine and maintenance workers to provide protection from falls.

Lanyards – Adjustable Length

Antenna Products Corp., 101 S.S. 25th Ave., Mineral Wells, TX 76067, 940-325-3301 FAX: 940-325-0716

CM®, A Columbus McKinnon Company, 140 John James Audubon Pkwy., Amherst, NY 14228, 800-888-0985 FAX: 716-689-5644

Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095

DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065

Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954

Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613

Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544

Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391

HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751

Klein Tools, Inc., 7200 McCormick Blvd., P.O. Box599033, Chicago, IL 60659, 847-677-9500 FAX: 847-677-4476

Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327

Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078

North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898

Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591

SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564

Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205

Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256

VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Lanyards – Rope

Antenna Products Corp., 101 S.S. 25th Ave., Mineral Wells, TX 76067, 940-325-3301 FAX: 940-325-0716

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966

Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372

CM®, A Columbus McKinnon Company, 140 John James Audubon Pkwy., Amherst, NY 14228, 800-888-0985 FAX: 716-689-5644

Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095

DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065

Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954

Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613

Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544

Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391

HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751

Industrial Safety Co., 1390 Neubrecht Rd., Lima, OH 45801, 800-537-9721 FAX: 419-228-5034

Klein Tools, Inc., 7200 McCormick Blvd., P.O. Box599033, Chicago, IL 60659, 847-677-9500 FAX: 847-677-4476

Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327

Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078

North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898

Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591

SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564

Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205

Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342

VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Lanyards – Steel Cable

Antenna Products Corp., 101 S.S. 25th Ave., Mineral Wells, TX 76067, 940-325-3301 FAX: 940-325-0716

Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372

Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095

DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065

Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613

Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544

Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Klein Tools, Inc., 7200 McCormick Blvd., P.O. Box599033, Chicago, IL 60659, 847-677-9500 FAX: 847-677-4476
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Lanyards – Web

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
Broner Glove & Safety Co., 1750 Harmon Rd., Auburn Hills, MI 48326, 248-589-1919 FAX: 800-276-6372
CM®, A Columbus McKinnon Company, 140 John James Audubon Pkwy., Amherst, NY 14228, 800-888-0985 FAX: 716-689-5644
Conney Safety Products, 3202 Latham Drive, P.O. Box 44190, Madison, WI 53744-4190, 800-532-1855 FAX: 800-845-9095
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Falltech, 811 West 58th Street, Los Angles, CA 90037, 800-719-4619 FAX: 323-752-5613
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Klein Tools, Inc., 7200 McCormick Blvd., P.O. Box599033, Chicago, IL 60659, 847-677-9500 FAX: 847-677-4476
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Sur-Loc, Inc., 3560 E. Swager Dr., P.O. Box 750, Fremont, IN 46737, 219-495-4065 FAX: 219-495-4205
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Lowering Device – Variable Speed Descent

This is a variable speed descent system that is controlled manually by the person descending or by a person above or below the point of descent. The device can also be used to lower equipment. It uses friction to control the descent of people or equipment suspended by belt, harness, sling, bosun's chair or stretcher. The speed of descent is governed by the number of turns of the line around fixed parts of the device and by the operator's control. Easy stopping of the descent and a method of "locking off" the device to remain in one place are important features of this system. Upon completion of the task, descent is continued to a lower level. Some models, used as shock-absorbing lifelines, allow descent to safety after arresting a fall. Recommended uses: For inspection, window cleaning, paining, lowering equipment, escape and rescue from any high structure such as buildings, towers, cranes, grain elevators, silos and construction sites.

Variable Speed Descent Equipment – Deadman Control

Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256

Variable Speed Descent Equipment – Spindle Type

Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078

Access Gangway/Ramp

This ramp, made of steel or aluminum, allows a worker to easily access the top of tank trucks or other transportation vehicles for the purposes of loading and unloading. A nonslip surface and high side railings protect users from falling. The ramp, which stores vertically, is operated by a spring balance or pneumatic retraction system. Recommended uses: To provide safe, simple access to loads in or on bulk transportation vehicles.

Fall Protection Systems, P.O. Box 687, Londonderry, VT 05148, 800-582-0533
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
PearlWeave Safety Netting Corp., 606 West 131 Street, New York, NY 10027, 212-283-0505 FAX: 212-862-8951

Ice Cleats – Slip Protection

These devices are designed to fit over any size shoe or boot to protect the wearer against slipping or falling on ice or snow. The cleats consist of a metal plate with teeth that is fastened to a woven strap. The strap fits over a shoe or boot, and the metal give traction underfoot. The cleat is designed to be put on or removed with one hand while standing or sitting.

Covell Enterprises Ltd., P.O. Box 1030, Warwick, NY 10990, 914-692-2515 FAX: 914-692-3649
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
Vallen Safety Supply Company, 13333 Northwest Freeway, Houston, TX 77040, 800-372-3389 FAX: 800-303-8256

Shock Absorbers

This shock-absorbing device is designed to afford fall protection by absorbing the kinetic energy of the fall, cushioning the impact and preventing the worker from absorbing the total shock. This is accomplished by progressively releasing nylon threads contained in a capsule which, upon breaking, dissipate the energy of the fall. The device is available in combination with either an adjustable nylon strap or nylon rope lanyard or in a waist belt/lanyard combination with a single pass or tongue buckle and double or single lock snaps. This shock-absorbing device is used only where fixed tie-off points are available. Recommended uses: For use in situations where a hazardous fall is possible as in construction work, etc.

Aros Inc., 28 south 400 East, Salt Lake City, UT 84111, 800-388-9279 FAX: 801-531-9966
CM®, A Columbus McKinnon Company, 140 John James Audubon Pkwy., Amherst, NY 14228, 800-888-0985 FAX: 716-689-5644
DBI/SALA, D B Industries, Inc., 3965 Pepin Ave., Red Wing, MN 55066, 800-328-6146 FAX: 651-388-5065
Elk River, Inc., P.O. Box 1767, Cullman, AL 35056, 800-633-3954
Frenchcreek Production, 626 13th St., Franklin, PA 16323, 814-437-1808 FAX: 814-437-2544
Gemtor, Inc., 1 Johnson Avenue, Matawan, NJ 07747, 800-405-9048 FAX: 732-290-9391
HY-SAFE TECHNOLOGY, P.O. Box 934, Antioch, IL 60002, 800-642-0775 FAX: 800-642-1751
Labelmaster, An American Labelmark Co., 5724 N. Pulaski Rd., Chicago, IL 60646, 800-621-5808 FAX: 800-723-4327
Miller-Dalloz Fall Protection, 1355 15th St., Franklin, PA 16323, 800-873-5242 FAX: 800-892-4078
North Safety Products, 26 Dansk Court, Toronto, ON, Canada M9W 5V8, 800-836-8006 FAX: 416-675-6898
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591
SELLSTROM/RTC, One Sellstrom Drive, Palatine, IL 60067, 847-358-2000 FAX: 847-358-8564
Tractel Ltd., FALLSTOP Div., 11020 Mirabeau St., Anjou, PQ, Canada H1J 2S3, 800-561-3229 FAX: 514-493-3342
VWR Scientific Products, 1310 Goshen Parkway, West Chester, PA 19380, 800-932-5000

Shoe Chains – Slip Protection

These chains fit over shoes and consist of rubber straps and a chain bottom. The straps are pulled over the shoe at the toe and heel, and the chain covers the bottom to provide protection on ice and snow.

Kako International, Inc., 0110 SW Curry St., Portland, OR 97201, 503-222-4801 FAX: 503-222-4813
Northern Safety Co., Inc., P.O. Box 4250, Utica, NY 13504, 800-631-1246 FAX: 800-635-1591